

FLIGHT

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Photo by Herbert and Son, Bowness.

HYDRO-AEROPLANES AND LAKE WINDERMERE.—Above is a photograph of Mr. E. W. Wakefield's hydro-aeroplane in flight across this great lake, the floats being well seen from underneath. The aeroplane is the construction of Messrs. A. V. Roz and Co., and the float and balancers of Messrs. Borwick and Son of Bowness.

EDITORIAL

**A Volunteer
Motor Kite
and Wireless
Corps.**

From the Honorary Secretary of the Kite and Model Aeroplane Association we have received details of a scheme for the formation of a Volunteer Motor Kite and Wireless Telegraph Corps, which is taking definite shape under the auspices of the Association. The scheme has received the approval of the Army Council, which has promised to co-operate with the Association in the carrying out of the details. At the same time the Council conveys the intimation that it is not intended to form another section of the Technical Reserve, so that the new corps will find its *metier* in co-operation with the Territorial Forces.

According to the detailed scheme which lies before us, the corps will be provided with the most up-to-date equipment, and will be the only motor kite detachment in the world. As is pointed out, by the side of the aeroplane the kite forms an essential part of the equipment of the modern army. Our own army is fairly well off in this respect, but only fairly so, and, moreover, its equipment is not capable of being transported with the rapidity which modern warlike operations render necessary, and with this in view, it has been decided by the Council of the Association to acquire at the earliest opportunity a motor man-lifting outfit of the best and most approved pattern with winding gear, which will be capable of transporting the full equipment, together with its detachment of an officer and sixteen men.

The sub-committee formed to consider the best type of kite have decided in favour of the "Cody" type which is the standard equipment of the Royal Engineers, which seems to us a very wise conclusion especially as we understand that Mr. S. F. Cody has consented to train the instructors who will have ultimately to teach the handling of his invention. The estimated cost of the whole equipment, including a 25-30-h.p. chassis and the cost of maintenance for two years, is £800, and the Association is appealing to public-spirited individuals to subscribe the necessary funds, so that the corps can be formed and set to work without delay. We have the greatest possible pleasure in making public the desires of the Association and in commending them to the patriotic citizen to whom British aerial supremacy appeals as something to be striven for, even in the face of official apathy. Not that we would lay any charge of apathy in this matter at the door of the Army Council, which seems to have done all that it could be expected to do in the way of giving its approval and promise of co-operation. More could scarcely be expected at the present juncture and we doubt not that if the proposed corps becomes a material fact and promises to become an efficient addition to our aerial forces, the Army Council will in time take it directly under its wing. In the meantime, donations towards the cost of equipment may be sent to Mr. W. H. Akehurst, the hon. sec., at 27, Victory Road, Wimbledon.

**Our
Astonishing
War Office.**

Truly the workings of the official mind are as obscure as those of the heathen Chinese! The *Pall Mall Gazette* of the 18th inst. has done a great deal towards the clearing up of a point which must have been something of a mystery to many. It must have struck those who follow the progress (*sic*) of military aviation that the half-dozen officers of the Air Battalion who do any cross-country flying, have been for some time past in the habit of ploughing a lonely furrow between Salisbury and Aldershot.

COMMENT.

On the other hand, the majority of those interested in flying may not have noticed this significant fact, for the simple, yet ample reason that it may have occurred to them that there is no longer any real military flying being done—a very pardonable conclusion to be reached. Now, thanks to our evening contemporary, the murder is out. Someone in high authority has forbidden the Air Battalion to traverse any other route!

The *Pall Mall* ventures the opinion that the least unreasonable explanation that occurs to the mind is that it is feared that flights further afield may entail expense in petrol and oil, and possibly in occasional motor-car or railway journeys, and the funds of the Air Battalion do not admit such generous expenditure upon these things.

Well, it may be so, but possibly the genius who evolved the order which thus restricts the sphere of operations of our Army aviators is afraid that our officers might learn something of the characteristics of the country over which they may one day have to fly in real earnest. That, it is scarcely necessary to say, would be dead against all the traditions of the British Army. Did we not muddle through the South African war without any real knowledge of the topography or characteristics of the country? And when the Chinese affair was suddenly sprung upon us in 1900, were not our staff compelled to rely upon Japanese good offices for the only really up-to-date maps and details of the country between Peking and the sea? And yet we managed to work through without any serious loss of prestige, as we usually do in the end.

It is good to know that when Parliament reassembles the whole subject of the Air Battalion and its administrative utilities is to be thoroughly ventilated and possibly this culminating piece of fatuousness will assist in arousing the public at large to something of a sense of the peril in which official ineptitude is placing the nation. The international political outlook for the immediate future is blacker than it has been for years past. We do not know the day we may be involved in the greatest war of modern times and yet we stand quietly by and watch the sort of foolishness going on which makes the Air Battalion the laughing stock of military Europe! One of these days the country will demand somebody's head on a charger, or we are much mistaken. When the demand comes, let there be no scapegoat, but the right head duly served up.

**France,
Britain,
and Naval
Aviation.**

There are some things they do better in France and aerial development for national defence is one. It is announced that during the current year France is to spend £40,000 on experiments in connection with naval aeroplanes. Up to the present there is nothing to indicate that we are to be allocated for similar purposes as many pence, while there is an ever-growing agitation on foot against the privately financed experiments which are being conducted on Lake Windermere! We dare venture the opinion that were Windermere in France, not only would there be no agitation, but that money, both public and private, would be offered freely for the helping forward of serious and useful experiment. We are credited with being a patriotic people, but —

So far as concerns the official attitude towards the naval aeroplane, we are not inclined to pessimism, because the signs are not altogether wanting that the Admiralty is on the eve of a serious move in the required direction. But the process is very, very slow!

THE SOMMER ALL-STEEL BIPLANE.

FOR quite a long time after Sommer gave up his business as felt manufacturer, and entered the arena of aeroplane construction, it cannot be said that his productions earned any great name for excellence of general finish.

Nevertheless they were, indeed, practical vehicles, as his list of successes prove.

That the life of an aeroplane in those days was reckoned as not being much longer than two months is, perhaps, some excuse for his not devoting a great amount of attention to the point of finish. To-day, however, engines are indefinitely more reliable, pilots have gained greater experience, and design generally has advanced, and concurrent with the increased length of life that these factors produce comes the desirability for higher-class detail workmanship.

Roger Sommer, indeed, has not lagged behind in this respect, and for the excellence that his new all-steel biplane exhibits as regards its general design, its detail work, and its standard of finish, we can forgive him much of the crudeness that characterised his earlier models.

Comparing his latest biplane with his former ones, it is noticeable that the cellular method of bracing the main planes has been discarded in favour of that originated by Breguet. The two main planes, unequal in span, are each built about a single boom of steel tubing passing through their respective approximated centres of pressure. These booms are separated by four steel stanchions arranged in a single row, and trussed together by stranded steel cable. In order to avoid the tendency for the booms to twist at the points to which the vertical stanchions are applied, these latter are made double, being each constructed from two parallel tubes of different diameters united by short lengths of the same material welded thereto. The planes are double-surfaced with green-rubbered fabric.

For the maintenance of lateral stability, the extensions of the top plane are so constructed that they can pivot about their main booms, and so take different angles of incidence, according to the discretion of the pilot.

They are interconnected, so that an increase in the angle of incidence of one is accompanied by an equal decrease in the angle of incidence of the other. In normal flight they both are incident to the relative wind at the same angle as the remainder of the top

surface, and thus constitute purely sustaining planes. By virtue of the simplicity of this system of bracing, the supporting surfaces can readily be dismantled for transport from place to place, a feature that is being devoted an ever-increasing amount of attention among French constructors.

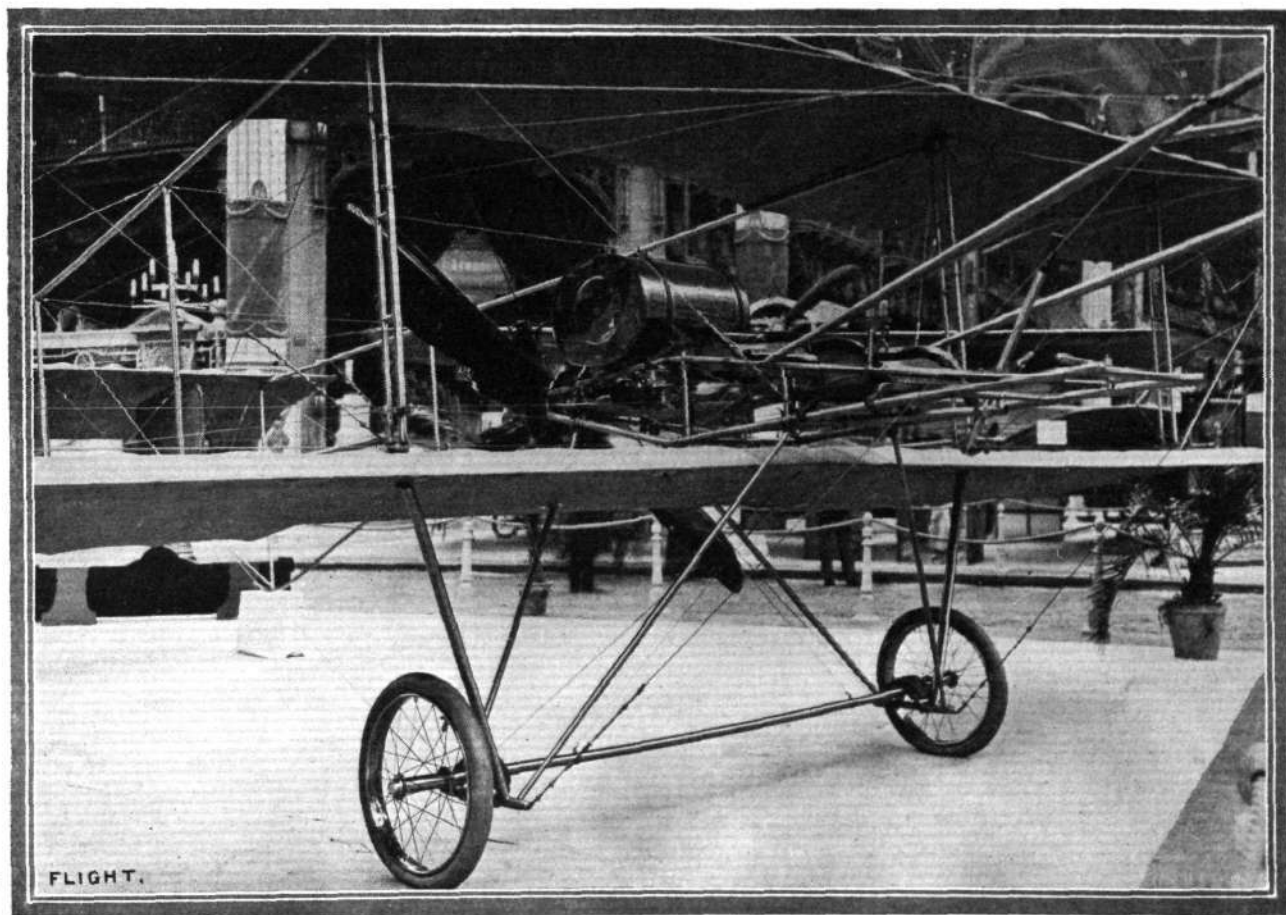
The tail consists of a fixed cambered monoplane surface mounted some distance behind the main planes on a pair of outriggers made solely from steel tubing. Behind this fixed surface is hinged a flap, which is connected to the front elevator and to the pilot's lever, and whereby the attitude of the machine in flight is governed. Two vertical rudders immediately beneath the tail provide the means of steering laterally. They are operated in the customary way by means of a pivoted foot lever.

The engine bed is formed by two tubular beams, representing the sides, united by cross-members of steel tubing, the whole being rigidly braced by steel wire. At its rear is mounted the 50-h.p. Gnome motor, direct coupled to an Integrale propeller. Two seats are provided, that for the pilot being about 2 feet in advance of the main planes, that for the passenger being in the same vertical plane as the centre of gravity. The chassis is quite an interesting feature, in that it is illustrative of the latest phase in the metamorphosis of the original Farman-type of landing gear. In common with other machines at the Paris salon, the skids have been entirely suppressed, and in this case a short piece of steel tubing, to which the common axle uniting the two landing wheels are flexibly strapped by rubber cord, is all that remains to remind one of their former existence.

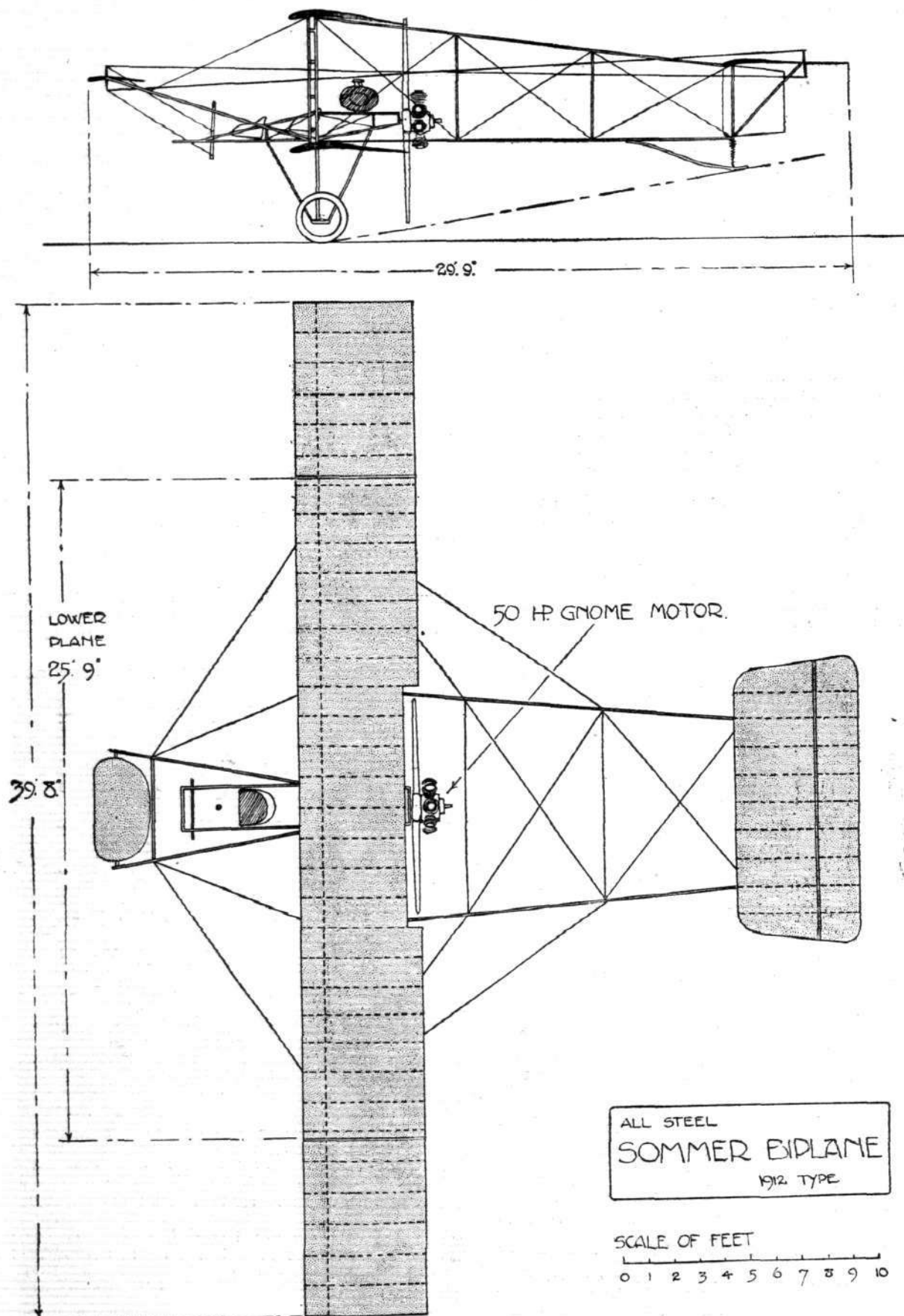
On each side the chassis is supported by one main tube and two subsidiary ones, the main one proceeding from the base of one of the central *cellule* stanchions, the two smaller ones being directly attached to the engine bed.

Radius-rods are no longer provided, and the axle itself is not trussed, as formerly, to enable it to withstand the tendency for it to bend by virtue of the overhang of the wheels. Now a pair of simple tension wires are provided to limit the amount of possible flexion of the axle.

Mounted in advance of the pilot's seat, on a pair of single tubular outriggers, is a pivoting monoplane surface, roughly elliptical in shape, which is connected to the control lever, and which presumably



THE SOMMER ALL-STEEL BIPLANE.—Detailed view showing landing carriage, method of bracing the main planes, and steel engine bed.



THE NEW ALL-STEEL SOMMER BIPLANE.—Plan and elevation to scale.

is intended to act as a forward elevator. As such, however, it really must be of little use, by comparison with the superior area and leverage of the rear-elevating flap. Indeed, the only apparent reason for its presence there is that it forms a constantly visible indicator of the attitude of the machine, and that its outriggers constitute a very

convenient point from which to brace the main planes against drift strains.

Weighing 638 lbs., the machine has been designed to lift a useful load of 500 lbs., and maintain a speed of 60 miles an hour.



A SUMMER FLIGHT (EASTCHURCH, SHEPPEY).

At the swing of the blade leaps my Gnome into life,
Spinning smooth on her shaft in a scintillant haze ;
Planes a-shiver, and stays,
Like a ship on the ways,
When the shores fall away at the lilt of the fife.
Roll out wide of her tail, give a hundred yards' run,
Ah ! she's spurning the grass in scarce fifty, or less !
In the wind's huge caress
Every wire bears its stress,
As we spring like a bird to the gates of the sun.
With a low-angled slant o'er the hangars we lift,
Beating up to the sea of aerial blue,
To the shimmering blue
Where no bird ever flew,
Nor do fleets of cloud argosies languidly drift.
Lo ! how quickly the landscape grows less in degree,
Well-nigh in a level lie valley and hill ;
Mountain top but a hill,
Stately river a rill,
And the king of the glade, squat Noah's Arkian tree !
A thousand feet up, and five hundred feet more,
Yet each dyke sends its upread of air in a blast ;
Field and farrow o'erpast,
Surging on thro' the vast,
Till below, myriad-wrinkled, the Channel's flat floor.

In pure ecstasy soar, climbing height and yet height,
In this cool-pouring volume of strong, singing wind.
In this ocean of wind,
Troubles swept from the mind
Seem to flutter and fall till they fade out of sight.

As an albatross poised on slant pinions outspread,
With no wing-beat impelling so royally wheels,
So we, braced on our heels,
As obliquely she keels,
Now in wide arc symmetric bring shoreward our head.

And adieu to the sea, as the coast-line swings under,
Giving way to grey downs, in the gloaming asleep.
Sussex downs fast asleep,
Save the unheeding sheep,
And shepherds, perchance, gazing skyward in wonder.

Dropping down from the sky—one deep rose all the west—
A spiral *vol plané* brings earth to our feet,
Gliding under to greet,
Sliding under to meet,
Till we touch and run on—run on lightly to rest.

A. T. C.



A FEW OF THE PUPILS AND PILOTS AT HENDON.—At the top, in a jubilant mood, is Mr. Raphaite of the Grahame-White School. Standing, reading from left to right, are Messrs. Baumann and Dubois of the W. H. Ewen School, Messrs. Pothet, Morris, Marcel-Dessouter, and Gordon Jones of the Blériot School. Sitting in front is Mr. H. Slack, pilot, also of the Blériot School.

ROUGH DESIGNS FOR A BOMB AND SIGHT.

By S. H. S. M.

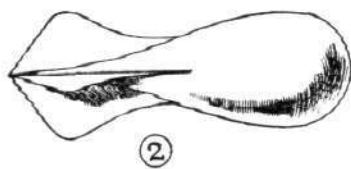
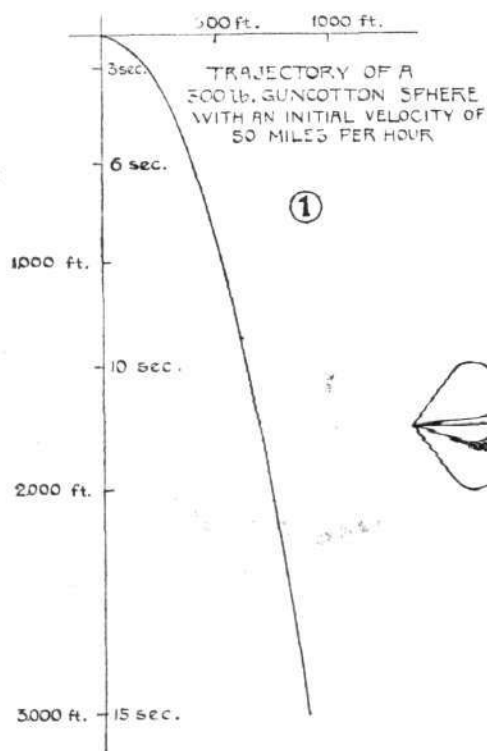
It is not here intended to treat of the inside nature of the bomb, but of its outside form alone. The size, the proportion of iron to explosive (also the shape of point), *e.f.c.* depend on the use to which the bomb is to be put; here only the best form for accurate dropping is considered.

For accuracy, the bomb must offer a small resistance to the air in its direction of flight, for the smaller the resistance the shorter the time of flight, and, therefore, the less the errors arising from faulty estimation, or variation of wind, and speed of enemy. And the shorter the time of flight the greater the striking velocity.

An ideal bomb would offer no resistance to the air. It would fall under the law $s = 16 \cdot 1 t^2$, and offering no horizontal resistance to the air would carry the speed of the aeroplane over the ground throughout its flight, and hit the earth vertically below the aeroplane at that moment (provided the aeroplane held on its course). This, in the matter of horizontal resistance, would simplify sight setting, as will be seen when the sight is described.

A sphere, 7 ins. in diameter and weighing 33 lbs., after falling 3,000 ft. in 15 secs., has a velocity of 346 ft./sec.; after falling 6,000 ft. in 23 secs., the velocity is 400 ft./sec., and soon after this it attains its maximum velocity of 430 ft./sec., the speed then becoming constant.

The ideal bomb, offering no air resistance would fall 3,000 ft. in



14 secs. and 6,000 ft. in 19 secs., having velocities of 440 ft./sec. and 620 ft./sec.

Comparing these figures, it will be noticed that up to 3,000 ft. the spherical bomb is almost ideal, but dropped from higher altitudes it loses efficiency quickly; high altitudes may have to be used if the enemy has a good defence.

The obvious improvement on a sphere is a stream-line form. The ratio of the resistance co-efficient of a sphere to that of a stream-line form is not known, but Sir Hiram Maxim gives '0022 for a round bar and '000195 for a stream-line sectional bar of the same area, one over ten times the other; probably for a sphere and a stream-line form of the same volume the proportion is many times ten.

Steadiness of the bomb in flight must also be obtained. A projectile gets its steadiness from the rotation given by the rifling of the gun. When it loses this rotation it turns over and over in the air varying its resistance and losing velocity in an irregular manner. To obtain steadiness the stream-line form must be fitted with a tail. Fig 1 is a suggested bomb.

The tail of this bomb will cause it to always present the same face, its bluff bows, to the air, and so its axis will always be a tangent to the trajectory. Consequently the broadside aspect of the bomb does not enter into the calculation of the trajectory, which is the same as that of a sphere having the same co-efficient of resistance. The broadside aspect need not on this account, therefore, be considered in the design of the bomb.

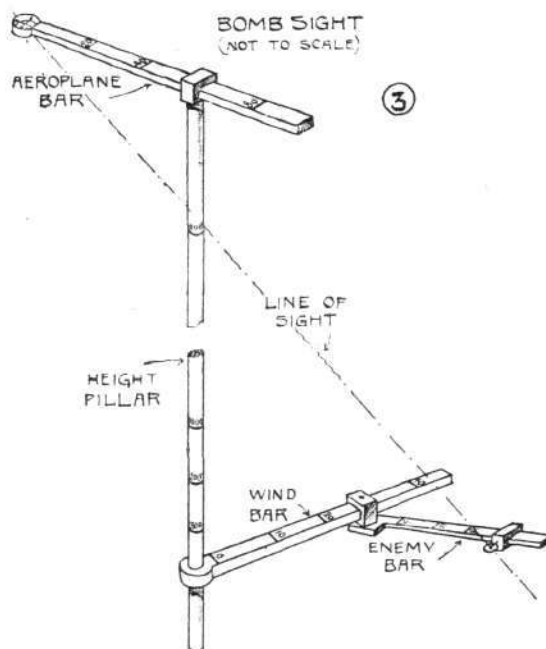
The trajectory of a 7 in. sphere, weighing 33 lbs., is shown in Fig. 2. As said before, the axis of the bomb is always a tangent to the trajectory. At the moment of letting go the trajectory must be horizontal (the bomb has the speed of the aeroplane horizontally and no speed vertically), and, therefore, the bomb should be let go in a horizontal and not a vertical position. (This suggests the possibility of a *gliding* bomb).

The factors to be considered in deciding the time and position to let go the bomb are: (1) The speed and course of the aeroplane; (2) the wind; (3) the speed and course of the enemy, and (4) the height of the aeroplane.

The wind will always be the hardest of these to estimate, and will have to be got by resolving the speed of the aeroplane over the ground into the speed of the aeroplane through the air, and the wind. This is one of the ordinary calculations of aerial navigation, but for bomb dropping purposes must be done with exceptional accuracy, even then there is no guarantee the wind will be the same all the way down to earth.

Let us assume a case:—Height, 3,000 ft.; aeroplane's speed and course, south 50 miles/hour (73 ft./sec.); wind from the west 30 ft./sec. The bomb is the one whose trajectory is given in Fig. 2.

The bomb will take 15 secs. reaching earth. During that 15 secs. the speed given the bomb by the aeroplane will take it 900 ft. south, the wind will take it 450 ft. east. So the bomb will have to be let go 900 ft. north, and 450 ft. west of the target. If the target is



moving also, say N.W. 20 ft./sec., the bomb must be let go another 300 ft. N.W. of the target.

To place the ship in this position it will be necessary to use some sort of sight, so that when the sight line is on the target (the sight being accurately set), the aeroplane is in a proper position to let go.

A picture of a rough form of such a sight is shown in Fig. 3. It has four bars, an aero-bar, enemy bar, wind bar, and height pillar. The aero bar carries at one end the back sight, this bar should be rigidly fixed to the aeroplane in the fore and aft line, with the sight aft. Sliding on the aero bar is a carriage, carrying on its underside the height pillar, and on the height pillar, mounted so as to swing round, is the wind bar, carrying in its turn the enemy bar pivoted on a carriage. On the enemy bar slides the foresight.

The aero, wind, and enemy bars are all graduated for speeds to a convenient scale, the zero of the aero bar being at the rear sight, and the zeroes of the other two at their pivots. In setting the sight the wind and enemy bars should be set to their respective speeds, and in the direction of their motions, as shown by the arrows in the picture; the aero bars should be set to the mean horizontal speed of the bomb, due to the speed of the aeroplane. This mean speed will vary with every height, being in our case $\frac{900}{15}$ ft./secs. = 60 ft./secs.

If the bomb were ideal, an impossibility, offering no air resistance, this speed would for all heights be the speed of the aeroplane, saving calculation or the use of a table.

The height pillar is graduated in heights with 0 at the heel. The length of each graduation from zero is the height divided by the

time of flight, to the same scale as the velocities (in our case 200 ft./secs., marked "3000" on the pillar).

The sight would now be quite correct, if the aeroplane was in strictly horizontal flight at the time of letting go. To allow for this not always being so the height pillar must be pivoted at its heel with a ball and socket joint, and the system below this joint weighted and counterbalanced, so as to always swing vertical. To be quite correct, the aero bar should be reset as the inclination varies, but for small alterations the error caused by neglect of this would be inconsiderable.

The first bomb let go will probably miss the target, due to errors of estimation of wind, *e.f.c.* Suppose it to fall 300 ft. S.W. of the target.

It is not possible to tell whether this 300 ft. is caused by an error of wind, enemy speed, height, *e.v.c.* The aeroplane should

turn round and attack again on the same course, letting go another 300 ft. N.E. of the last let-go position.

A "spot bar" might be substituted for the foresight, a similar bar to the enemy bar; its adjustment in our case would be $\frac{300}{15}$ ft./secs. = .20 ft./secs. the bar pointing S.W. But a system of analysing "spots," and discovering what errors of sight setting they were due to, would be much better, as the setting of the spot bar would be only good for one course of the aeroplane.

It should be noticed that the speed and course of the aeroplane over the ground is denoted by a horizontal line joining a point below and abaft the rear sight to the pivot of the enemy bar. With the "ideal" bomb before mentioned this line would join a point directly below the rear sight to the pivot. This may be used as a rough check on the setting of the sight.

✱ ✱ ✱ ✱ ✱ AEROPLANE ACCIDENTS.

GENERAL RUCK's suggestion at the last meeting of the Aeronautical Society, that science owed it to humanity to leave no stone unturned to try and mitigate the danger of flying by a more complete understanding of the nature and causes of aeroplane accidents, touches a principle that deserves the strongest support. In the preliminary

stages of an investigation all reliable statistics are helpful and we publish below, with acknowledgments to our contemporary the *Automobil-Welt*, a tabular analysis of aeroplane accidents, which they have compiled and which we have slightly amended in regard to British Machines.

Statistical Table of the Victims of Flying Accidents. (*Automobil-Welt*, December 13th, 1911.)

The 93 fatal accidents occurred with ...				Per Cent. of Victims Killed in Flying		12 Passenger Flights ended Fatally for			In 12 Passenger Flights were Killed		No. of Flights Terminating Fatally.	No. of Aviators Killed who had Not Pilot Certificates.										
				Alone.	With Passenger.	Pilot and Passenger.	Pilot only.	Passenger only.	Pilots.	Passengers.												
(In two cases type was unknown)				81	19	7	3	2	10	9	93	16*										
Monoplanes ...	Total 38	15	3	2	2	2	I each															
Name	Blériot.	Antoinette.	Nieuport.	R.E.P.	Valkyrie.	Dorner, Deperdussin, Lilienthal,† Leforestier, Moisant, Oertz, Pietschker, Pilcher,† Pischoff, Poulain, Queen, Russijan, Sommer, Wiesenbach.															
Biplanes ...	Total 52	10	8	5	4	4	3	2	2	I each												
Name	H. Farman.	Wright.	Sommer.	Aviatik.	Curtiss.	Savary.	Voisin.	Curtiss copies.	Albatros, Astra, Baldwin, Bristol, British Army, Breguet, Caudron, M. Farman, Fernandez, Hartle, I.A.M.C., Lière, L.V.G., Marra, Short (Grace).												
Countries ...				France.	America.	Ger-many.	England.	Italy.	Russia.	Austria.	Spain.	Belgium.	Holland.	Luxem-burg.	Bulgaria.	Siberia.	Switzer-land.	Algeria.	China.	Brazil.	Peru.	Un-known.
Per cent. of victims belonged to ...				34	15	15	12	8	5	—	3	2	1	1	1	—	1	—	—	1	1	—
Country of origin of machine ...				53	12	14	7	1	—	3	—	—	—	—	—	—	—	—	—	—	—	3
No. and country where accidents occurred				32	16	14	8	6	5	1	1	2	1	—	—	1	1	1	1	2	—	1
				America.		Italy.		England.		Germany.		Russia.		France.								
Ratio of No. killed to No. of holders of pilot certificates §				12 (35‡) = 34.3 per cent.		7 (45‡) = 15.5 per cent.		9 (110‡) = 8.2 per cent.		11 (135‡) = 8.14 per cent.)		3 (55‡) = 5.45 per cent.		27 (500‡) = 5.4 per cent.								

* Including 3 killed on gliders. † Gliders. ‡ The figures in brackets give the number of certificated pilots up to the end of October, 1911. § Those who were killed while flying without pilot's certificate, or as a passenger, or in glider experiments, have been omitted. Their numbers are: France, 7; Germany, 4; America, 3; England, 3; Russia, 2; Italy, 1.

✱ ✱ ✱ ✱ ✱ AEROPLANES.—"CONDITIONAL CONTRABAND" ONLY.

DEALING with the seizure of the French liner "Carthage" by reason of its having on board an aeroplane, the property of M. Duval of the Duval-Obre Aviation Tour, the *Law Journal* says:—

"The Italians seem to have offended again, against one of the articles of the Declaration of London (which is accepted by both belligerents in the Tripoli war), in seizing a French vessel transporting aeroplanes for the carriage of contraband. The vessel was bound for the neutral territory of Tunis, and by Article 25 of the Declaration balloons and flying machines, and their component parts fall within the category of conditional contraband; while by Article 35 "conditional contraband" is not liable to capture except when found on board a vessel bound for territory belonging to or occupied by the enemy, and when it is not to be discharged at an intervening neutral port. The captors would appear to have assumed that the aeroplanes were destined for the Turkish forces, but while they might legitimately have acted upon this suspicion and seized

the vessel carrying them, had they been in the class of absolute contraband, they were precluded by the Declaration from such action in regard to goods which were only conditionally contraband. . . . But, as the law stands at present, flying machines may only be treated by a belligerent as contraband when they are consigned to the enemy's country, and when they are shown to be destined for the use of the armed forces of the enemy. Neither of the requisite conditions was present in the case of the Italian seizure, and the French shippers and shipowners would seem to be entitled to compensation for the wrongful detention. If the Italians desire to include aeroplanes in the class of absolute contraband, they must give proper notification to neutral Powers; but seeing that such machines can hardly be represented as 'articles exclusively used for war,' neutrals might reasonably object to the notification."

From the fact that the Italians have since given up the aeroplane it would seem they have recognised the situation in this light.

AIR EDDIES.

FOR some weeks past an American aviation concern, to popularise its flying school in South Florida, has been advertising a proposition to carry pupils from Chicago to the scene of tuition operations, a distance of approximately a thousand miles, by special train, there to accommodate and board them until the completion of their training, for an inclusive fee of £60. If only some good kind benefactor in England would start a similar scheme—tuition at the Shoreham aerodrome, specials down from London, and keep at the "Brighton Metropole" meanwhile, for the same fee—what a crowd of pupils he'd gather to be sure. I'd join for one.

The performances of the new Bristol two-seater military monoplane have called forth unqualified praise from the military experts of the various countries who have been attending the great Exposition in Paris, and during the past month several of the Continental Governments, as well as the British War Office, have entrusted their orders to the Company. With the reputation for excellence of design and workmanship that their machines have earned both at home and abroad, together with the multiple facilities that this increase of funds will afford, the Bristol Company should not be long in establishing themselves as foremost aeroplane constructors of the world—to the credit of British industry and enterprise.

A £20 prize has been most magnanimously offered by a certain Glasgow theatrical manager for a flight from the outskirts of that town to Glasgow Green, one of the local public parks. Some few years ago a very noted General held an inspection of the local volunteers at that park. So great was the enthusiasm evoked, and so unruly became the crowd of spectators, that they rushed on to the temporary parade ground, broke up the lines of soldiers, and insisted on shaking hands with the officiating General.

Query—What would happen to the person and the aeroplane of the aviator attempting this flight?

Some of us would indeed open our eyes if we suddenly heard that Louis Blériot was manipulating a Farman biplane. Yet it is quite on the *tapis* that an almost parallel case is going to happen in England.

Another interesting report, one of a series that has been steadily emanating from America these last two years, has been circulated to the effect that the Wright Brothers have "at last" perfected a device for maintaining stability in aeroplanes by mechanical means. A 4-oz. steel bar suspended pendulum fashion from a bracket below

the aviator's seat is apparently the essential part of this device. As with all these reports, we can only remain dubious at the moment and adopt the classic "wait and see" policy.

As I write these lines, Sydney V. Sippe is still fondly watching over the Avro biplane at Abingdon, waiting patiently for an opportunity of returning to Brooklands, calling at Salisbury Plain and Farnborough on the way. So that he will not get "rusty" at piloting, he has been taking advantage of every short break in the weather to carry out exhibition flights. His engine, a Viale, is, as he expresses it, running top hole, as is evident from the fact that he invariably flies at the 1,000 ft. level.

Captain Loraine, who recently won his credentials on a Valkyrie monoplane, of which he proved such a skilful pilot, has evidently been so impressed with the flying of the "Dep.," and perhaps more particularly with Ewen's handling of it, that he has joined the W.H.E. School at Hendon, to gain experience on both that machine and the Blériot. Since Ewen has settled his school in London he has enrolled a new pupil each week.

Another convert to the Deperdussin in England is Captain Fulton of the Army Air Battalion, who has been flying that machine at Brooklands. Not long since the school "taxi," primarily intended for rolling operations, was equipped with an Avro propeller, since when it has apparently entered on a new lease of life, and with the increased thrust that it delivers the machine really does more flying than rolling nowadays.

Conway Jenkins, well known in aviation circles through his performances on both the Avro biplane and the Blackburn monoplane, has resigned his long-standing connection with Bedford Motors, Ltd., to commence trading in cars on his own account at Empire House, Piccadilly.

I am sure he has our sincere wishes for the best of good luck in his new enterprise.

Indicative of that body's appreciation of the eminently sound work carried on by the original quartet of naval officers at Eastchurch, the Admiralty has raised the rank of one of their number, Lieut. C. R. Samson, to that of Acting Commander while he is in service on His Majesty's ship "Actæon," or at the Royal Aero Club's flying ground at Eastchurch.

Congratulations to the new *Actæon* commander!

Since severing his connection with the R.E.P. firm, Bobba has apparently found it difficult to decide on what machine to fly in the future. Showing great versatility, he has been trying several different types. Not long ago it was the Sloan bi-curve he was piloting; now it is the Morane-Saulnier. His first flight on this latter machine, an extremely speedy one, was of 25 minutes' duration at an average height of 2,500 feet.

Congratulations to James Valentine and S. F. Cody on having been awarded silver medals by the Royal Aero Club for their performances in the *Daily Mail* Circuit, and to Pierre Prier on getting a similar "recognition" of his non-stop fly to Paris last April. The Royal Aero Club has also awarded a silver medal to C. F. Pollock for his fine ballooning work.

"OISEAU BLEU."



Commerce in the Air.

SPEAKING at the triennial dinner of the Glasgow Consular Association on Monday, Lord Inverclyde invited those present to have a peep into the future, and said that, speaking as one of Britain's shipowners who rather prided themselves that they commanded to a great extent the trade of the world on the ocean, he thought they had to go further and capture the trade of the air. He thought it was quite possible that if not within the next three years then within the next six years there would be commercial ships in the air, and he was sure that his hearers as members of the British Empire would do their best to further the interests of trade in the air.



Gordon Bell, the English demonstrator of the R.E.P. monoplane at Buc.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

Annual General Meeting.

The Annual General Meeting of the Members of the Royal Aero Club of the United Kingdom will be held on Thursday, March 21st, 1912, at 4 o'clock, at 166, Piccadilly, London, W.

Notices of motion for the Annual General Meeting must be received by the Secretary not less than twenty-one days before the meeting, and must be signed by at least five members. Thursday, February 29th, 1912, is the last day for the receipt of notices of motion.

Committee.

In accordance with the rules, the Committee shall consist of eighteen members. Members are elected to serve for two years, half the Committee retiring annually. Retiring members are eligible for re-election.

The retiring members of the Committee are :—

Ernest C. Bucknall.	Sir Charles D. Rose, Bart.,
Col. J. E. Capper, C.B., R.E.	M.P.
G. B. Cockburn.	A. Mortimer Singer.
E. Manville.	Hon. A. Stanley, M.P.
J. T. C. Moore-Brabazon.	R. W. Wallace, K.C.

Any two members of the Club can nominate a member to serve on the Committee, having previously obtained such member's consent. The name of such member so nominated, with the names of his proposer and seconder, must be sent to the Secretary in writing not less than fourteen days before the Annual General Meeting. Thursday, March 7th, is the last day for the receipt of nominations.

Members are reminded that a ballot paper for the election of nine candidates to seats on the Committee of the Club will be forwarded to them at least seven days before the date of the Annual General Meeting.

Committee Meeting.

A meeting of the Committee was held on Tuesday, the 23rd inst., when there were present :—Mr. R. W. Wallace, K.C., in the Chair, Mr. Ernest C. Bucknall, Mr. G. B. Cockburn, Prof. A. K. Huntington, Mr. Alec Ogilvie, Mr. Mervyn O'Gorman, Mr. C. F. Pollock, Mr. A. Mortimer Singer, and Harold E. Perrin, Secretary.

New Member.—The following new member was elected :—Captain George Arthur Royston-Pigott.

Award of Medals.—It was unanimously resolved to award the following medals for the year 1911 :—

Aviation—

Silver medal	P. Prier	...	Flight London to Paris, April 12th, 1911.
Silver medal	James Valentine		Performances in <i>Daily Mail</i> and European Circuits, June and July, 1911.
Silver medal	S. F. Cody	...	Performance in <i>Daily Mail</i> Circuit, July, 1911.

Ballooning—

Silver medal	C. F. Pollock...	General merit.
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Annual General Meeting.—It was decided to hold the Annual General Meeting on March 21st, 1912, instead of March 28th, 1912, as previously announced.

German Aero Exhibition.

An International Aero Exhibition will be held in Berlin from April 3rd to 14th, 1912, particulars of which can be obtained on application to the Secretary, Royal Aero Club, 166, Piccadilly, W.

Gordon-Bennett Aviation Cup.

The cup having been won by a representative of the Aero Club of America, the race for 1912 will take place in the United States. The exact time and place will be announced later.

At the recent Conference of the Fédération Aéronautique Internationale in Rome, it was decided that the course is to be a closed circuit with a minimum of 5 kilometres, and the total distance to be flown is 200 kilometres.

Each club affiliated to the Fédération Aéronautique Internationale has the right to challenge the holder, the Aero Club of America, and such challenge must be sent in before March 1st, 1912.

The Committee of the Royal Aero Club will select the three competitors to represent the British Empire, and intending candidates are requested to notify the Secretary on or before February 15th, 1912, of their willingness to compete, if chosen. Applications must be accompanied by a cheque for £20, the entry fee, which amount will be returned should the entrant not be selected.

Naval Officers at Eastchurch.

Lieut. C. R. Samson, R.N., who has been in command of the Naval Flying Establishment at Eastchurch, has been promoted to Acting Commander. This is the first promotion given to an officer in either service in connection with aviation.

166, Piccadilly.

HAROLD E. PERRIN, Secretary.

ROYAL AERO CLUB FLYING GROUND, EASTCHURCH.

COMMANDER SAMSON, R.N., and Capt. Gerrard, R.M.L.I., flew the Short tandem machine on Wednesday last week, and found her to have excellent controllability. Capt. Gerrard who took her up to 700 ft., with a passenger, says she climbs remarkably well. On Saturday, a company of territorials, in charge of Lieut. Cockerell and Lieut. A. V. Barrington-Kennett came down for the week-end. Mr. Maurice Bidder, Captain of the Territorial Balloon Corps, was also down on Saturday and Sunday. Some excellent flying was done by Lieuts. Cockerell and Barrington-Kennett, the latter qualifying for his pilot's certificate, completed the first half of the test in splendid style, and only a slight engine trouble coupled with approaching darkness prevented him from completing both tests. During the day, those of the territorials who had not previously had the experience of flying were taken for a short trip by Lieut. Cockerell and Mr. J. L. Travers, respectively.

A rather strange sight was witnessed on Saturday the 13th inst.; Jezzi towing into its shed the new Brocklehurst monoplane which owing to some slight mishap, had become stranded on the ground. The towing was done at quite a respectable speed; Jezzi who generally does about sixty miles per hour on his little machine, probably not realizing that he was doing only some 25 miles per hour during the towing. Mr. Fowler, who, by the way, is largely responsible for the designing of the landing chassis of the Brocklehurst monoplane, has put some good work into the machine. The wings are something after the Etrich style, having been designed by Major Brocklehurst to give automatic stability when flying.

Mr. Alec Ogilvie was flying his N.E.C.-engined Wright biplane

for several hours on Saturday and was also out on Sunday morning, the machine going excellently.

On Monday, Commander Samson, R.N., and Capt. Gerrard, R.M.L.I., were out early on the Short tractor biplane and during the day tested the speed which slightly exceeded 56 miles per hour; when the fuselage of this machine is covered in, she will be really quite fast for a biplane, although she was not designed particularly for speed. The new Short tractor biplane was designed by Messrs. Short Bros. some 18 months ago, for the late Mr. C. S. Grace, but was not proceeded with after his death until some three months ago, when the designs being shown to Mr. F. K. McClean, he immediately placed an order for one, which resulted in the present machine being built. Its speed is 56 miles per hour, and when in flight the non-lifting tail is at a negative angle.

Lieut. Gregory, R.N., was also out on the Short triple-twin machine, in connection with Naval instruction work. He made an excellent flight in very foggy atmosphere, rising to a height of 400 ft., from which height the aeroplane sheds were not visible.

Ogilvie was in the air on the N.E.C.-engined Wright biplane. A peculiar effect was produced by the machine immediately disappearing in a fog bank on rising to a height of about 400 ft.

Commander Samson, R.N., Capt. Gerrard, R.M.L.I., and Lieut. Longmore, R.N., all made excellent flights on the new Short tractor biplane. Lieut. Dunne was also out on his monoplane and made a long flight at an altitude of about 200 feet, a good breeze blowing during the flights.

During the afternoon Capt. Gordon, R.M.L.I., was flying in a strong wind for about one hour, on the Short Naval School machine.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Flying Ground, Eastchurch.

The report for the week follows the official notices on page 81.

Brighton-Shoreham Aerodrome.

By the time this appears in print, Lieut. Walter Lawrence should have his Blackburn monoplane and have put in some good flying here.

Messrs. M. Chanter and Co.'s staff has been busy getting the Blériots into flying order again, and one of the machines will be at work again before the end of the week.

A 35-h.p. Green is being fitted in the Collyer-England biplane as the machine has proved its worth and promised excellent results if provided with more power. Great things are looked for when she comes out again this week-end.

Brooklands Aerodrome.

On Wednesday of last week there was no flying, owing to fog and rain. Thursday was little better, and though Pizey, on the Bristol, went up he returned to earth almost immediately. Percival also flew some straights. To-day saw the re-appearance of the Flanders monoplane, which underwent some engine tests. This machine has had several alterations made, the radiators being further back along the fuselage, and the warping wires being carried to a cabane instead of to the landing chassis. A few days should see her flying again. In the afternoon Pizey flew some straights with Lane as passenger.

On Saturday morning Pizey was up giving instruction in turning and landing to Lieut. Smith. Percival, just as he was leaving the ground, had the misfortune to drop one of his running-wheels. On landing, the machine naturally dropped on one side, and made a violent turn in the same direction, breaking one of the inclined struts in the landing-chassis. Fisher put in some circuits on the Vickers machine, flying again in his old excellent style. Later Beatty did some straights on the same machine. One of the school Deperdussins was out, under the pilotage of Sabelli.

In the afternoon Pizey took up Charteris as passenger on the Bristol for some time; then with Smith, who subsequently made some straight flights with rather extraordinary landings. Spencer flew some extra-banked circuits, while Hunter was out tuning up the Humphreys monoplane, and flying straights at about 20 ft. Beatty then did straights on the Vickers. Pizey was up again with Lang as passenger, and on their returning to earth Sopwith took the machine up, expressing astonishment at the improvement in the machine since last he flew it. Lane then did some rolling, and later was passenger with Pizey.

Sunday was very foggy, but Capt. Wood flew one straight on the new single-seater Vickers. Pizey was up giving tuition to Capt. Weeding and Smith, then with Mr. Rae as passenger. Ducrocq, who seems to like flying in darkness or fog, made a great number of circuits, being only visible for a few seconds at a time. As last week, he was flying his Farman-type biplane, and not a Nieuport, as was incorrectly stated. Young put in some practice on the Green-

Avro, but soon returned, owing to his inability to see. Hunter also did some hops on the Humphreys.

On Monday there was again no flying, and on Tuesday, Capt. Fulton, who has joined the Deperdussin School in order to get experience on this machine, was the only one out. Owing to propeller trouble the machine stopped at the far end of the ground and was wheeled back to the shed.

Vickers School.—What with fog, rain and wind—Wednesday, Thursday, and Friday last week were *dies non* so far as outdoor work was concerned. Saturday turned out very foggy early, but it cleared for a little while, and then Fisher did some straight lines to see if it was clear enough for the pupils. Mr. Beatty, in doing some straight lines, afterwards unfortunately smashed the tail skid through trying to avoid some rough ground. Fog coming up bad again nothing more was attempted. Vickers No. 3 was put through her first trial by Capt. Wood on Sunday, in spite of its being very foggy. The machine rose at first attempt to put her up, and looks like being a very fast machine. As to the pupils, fog was too thick for any attempt at air work by them. Both Monday and Tuesday thick fog took charge again, work being confined to the hangars.

Eastbourne Aerodrome.

It was horribly wet and windy all last week, except Saturday, when V. Yates was up on a Gnome-Blériot for 21 minutes, doing right and left turns with good bankings up to 400 ft.

London Aerodrome, Collindale Avenue, Hendon.

Grabame-White School.—Workshop instruction only was possible Wednesday and Thursday last week, the same tale as all over the country being wind, fog and rain.

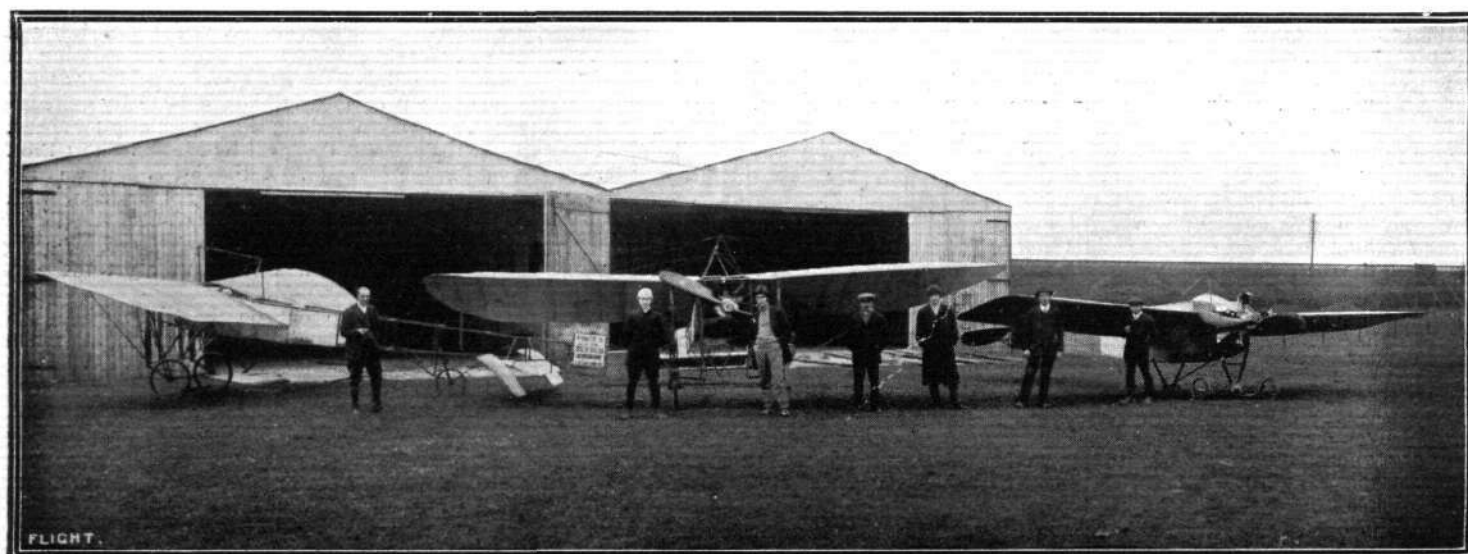
The weather showed a little improvement on Friday, although rather foggy; this, however, did not deter Fowler from taking out biplane No. 3, and putting in 15 mins. at good straights, after which he changed to biplane No. 1 and made a good circuit at a height of about 120 ft., landing in fine style. Monoplane No. 4, which has just been fitted with a 25-h.p. Anzani engine for school work, was also out in the hands of the engineers for test, the engine running well and pulling 190 lbs.

Saturday was a repetition of rain and fog, pupils being engaged in the workshops.

Monday morning very foggy; pupils all receiving theoretical instruction in the works from Lewis Turner, who has now joined the staff of permanent pilots. Fog cleared somewhat in the afternoon, and several of the pupils turned out for practice. Fowler mounting biplane No. 3, and doing fine straights with perfect landings, should very soon qualify for *brevet*; Biard was out putting in some good rolling with slight hops, and Raphaite was also rolling.

Tuesday was again wet and windy, pupils being confined to the works.

A.S.L. Flying School.—Last week the Aeronautical Syndicate works were very busy hurrying forward the new Gnome-Valkyrie racer, and on Sunday afternoon, in spite of the fog, Mr. Barber had the machine out for trial flights. He made several successful flights,



The Chanter Flying School at Shoreham, with their two Anzani-Blériots and their 35-h.p. monoplane modelled on Nieuport lines. At the left-hand side is Mr. M. Chanter, the Director of the school. To the right are Messrs. De Villiers, Gassler, Kent, Ross, and two of the school mechanics.

but no great altitude was possible owing to the fog. The new machine came out with the usual excellent finish so characteristic of the A.S.L. workmanship, and is somewhat lighter than its fore-runners. It also differs from previous practice in that the wings warp, and are set at a slightly less dihedral angle.

Although the inclement weather has been detrimental to much practice at the Flying School, work is going on apace at the A.S.L. School of Aeronautics within the hangars; and several new pupils have joined both the practical and technical sides.

Blériot School.—The School was only able to work on one day last week, viz., on Friday morning, when the weather allowed a small amount to be done between the hours of 8 and 10. During this short interlude, M. Pothet put in some good straight lines, Mr. Clappen also doing similarly, and making good progress; M. Desoutter made a circuit of the Aerodrome, and is impatiently waiting a fine day to pass for his *brevet* as are also Messrs. Parr, Allen, Prensnel and Welburn, who are quite ready to go through the tests.

The rest of the week the weather has been too bad for any outside work of any sort.

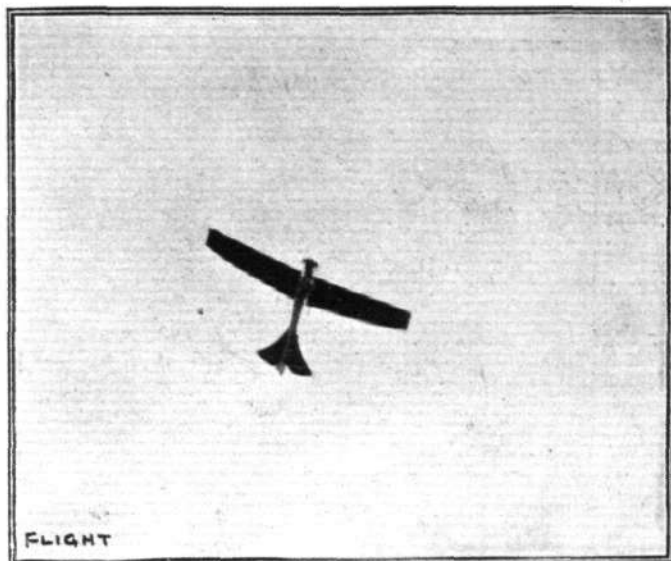
W. H. Ewen School.—Owing to rain and fog during last week work has been chiefly confined to the hangars, and the pupils have been well occupied in assisting in the construction of spare parts and the overhauling of engines. On Sunday the W. H. Ewen pupils took sole possession of the aerodrome and put in a splendid day's practice. The fog was rolling about in banks when Mr. Ewen brought out the "Dep." and quickly rose to 300 ft. At times completely lost to view in the fog, he gave a very fine exhibition, executing several sharp right and left turns, banking steeply, and finishing with one of his long glides. On Monday afternoon, although there was some fog and wind, the pupils put in some valuable practice.

Capt. Lorraine, who qualified so brilliantly for his *brevet* on the "Valkyrie," having joined the school, made his first attempt with the Blériot. Notwithstanding the difference in control from his "old mount," he was quickly able to make good straights, and should soon be putting up some fine flights on the school "Dep." Mons. Dubois and Baumann showed splendid control of the Blériot, in "skimming" along in a true line, while W. T. Warren made a good right and left turn. Mr. Lawford has also progressed to the straight flight stage.

Salisbury Plain.

Air Battalion.—During Wednesday of last week work was confined to the hangars on account of the treacherous winds, and at night there was a very heavy snowstorm, which covered the Plain to a depth of four inches. On Thursday, although the snow was still falling, Capt. Fulton and Lieuts. Barrington-Kennett, Connor, Hynes, Fox, and Manisty, were all seen flying round the Plain on Bristol biplanes. On Friday morning the same officers were out again, taking advantage of the bright weather, and one of the most striking flights was that of Lieut. Barrington-Kennett, who, after flying around Bulford Camp at a height of about 2,000 ft., came down with a graceful spiral *vol plané*. The weather was foggy in the afternoon, the officers, however, being out again. The bad weather prevented any flying on Saturday and Sunday, but there was a welcome change on Monday. Capt. Fulton was away taking lessons on the Deperdussin monoplane at Brooklands. Lieuts. Barrington-Kennett, Connor, Hynes, Fox and Manisty all made good flights, and at one time four machines were in the air together. On Tuesday the weather was very changeable, and Lieuts. Fox and Manisty each secured a little practice on a Bristol biplane.

Bristol School.—Baron Cederström paid a visit to the school on



The Vickers monoplane in flight at Brooklands.

Thursday last week. There was a wind of 15 miles an hour as well as a heavy fall of snow, and the Baron doubted whether any machine could successfully brave the elements. Jullerot accordingly went up on a biplane and made a very successful flight, although nearly blinded by the snow. After the wind had dropped and the fall of snow had ceased, Lieuts. Ashton and Murray, as well as Bendall, made solos. Later Jullerot took Baron Cederström as passenger in biplane No. 66, doing some wonderful right and left-hand turns and "switchbacks." Harrison made one flight, after which the renewal of the fall of snow and a thick fog rendered further flying impossible.

On Friday, Jullerot took up Baron Cederström, giving a demonstration in *vol plané* from a great height. Lieut. Brodigan and Harrison each did one solo, and Bendall and Lieuts. Ashton and Murray three each.

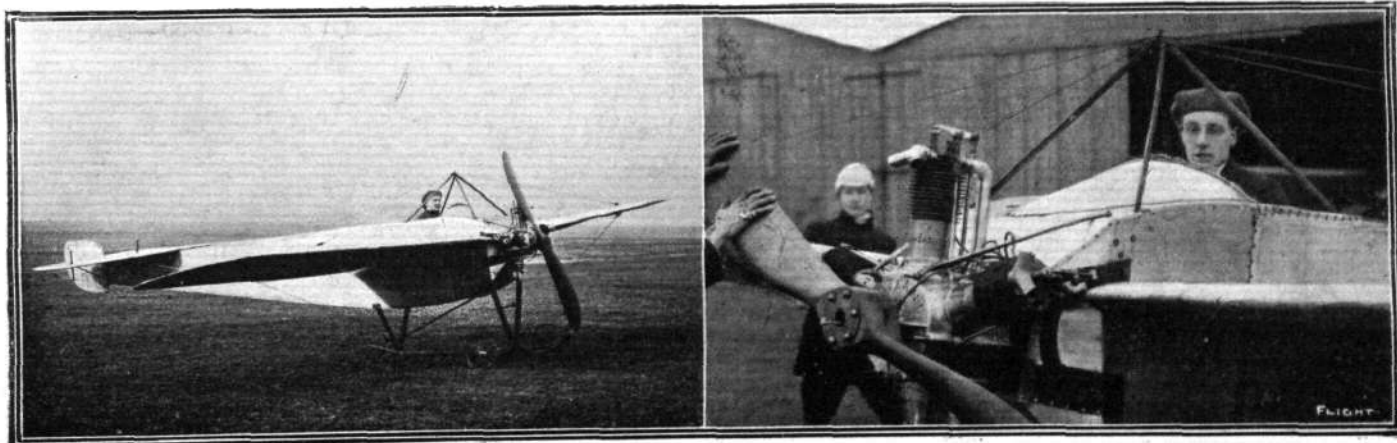
Very rough breezes prevailed on Saturday, and one flight by Fleming made the total of the day's flying.

Twenty-seven flights were made during Monday, which was the best, from a flying point of view, which has been experienced for some time. Jullerot put up four flights, and Fleming two, on one of which he took Lieut. Ashton as passenger. Lieut. Murray did six fine solos, and is now quite ready for his *brevet*, and Lieut. Brodigan was up alone three times. Prier made a very impressive flight on monoplane No. 58. Mr. Smith-Barry and Lieut. Ashton each scored two solos, Harrison three, and Bendall four.



Mr. Cody in a Fog.

WHILE making a short flight with a lady passenger on Friday of last week, Mr. Cody had a somewhat exciting experience. When coming down he narrowly missed touching the roof of his own shed, but by putting the helm "hard over" he managed to get clear, and although the chassis of his machine had a bumping, its substantial construction carried it through, and neither Mr. Cody nor the passenger, Miss Ferrar, were any the worse for the episode.



The Chanter-Nieuport-type monoplane, equipped with 35-h.p. Anzani motor. On the right, Mr. M. Chanter at the lever of this 35-h.p. monoplane.

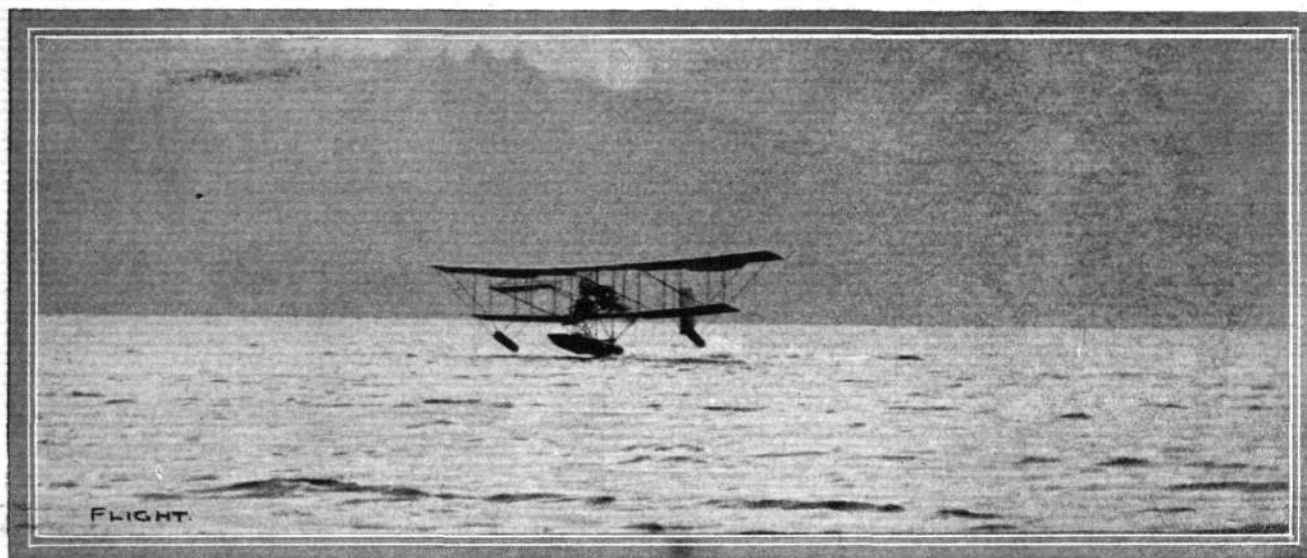


Photo by Herbert and Son, Eowness.

HYDRO-AEROPLANES AND LAKE WINDERMERE.—Mr. E. W. Wakefield's Avro machine just rising from the waters of Lake Windermere.

AEROPLANE AND GLIDER CLUBS.

Polytechnic Aero Club (REGENT STREET, W.).

THE first general meeting of the Polytechnic Gliding Club took place on Friday, the 19th inst., at the Polytechnic, Regent Street, W., commencing at 9.15 p.m. Mr. B. Graham Wood presided over a good gathering, and much business was transacted. The following officers were elected: Mr. W. H. Emerton, hon. sec., Mr. R. C. Carline, hon. treasurer. These two gentlemen, in conjunction with Messrs. B. G. Wood, M. B. Ross, Fairfax and Berkinger, will form the committee. Mr. Wood gave full details of the design of the proposed glider, on which work will be commenced on Monday, the 29th inst. Working drawings are now in course of preparation, and the materials will be bought during the current week. It is expected that the glider will be completed early in March. It was decided to change the name of the club from the "Polytechnic Gliding Club" to the "Polytechnic Aero Club," as there is a probability of the club acquiring an engine. The subscription was fixed at 10s. for ordinary members, but for a limited period working members will be allowed a reduction of 5s. Prospective members can obtain further particulars from the hon. sec., Wm. H. Emerton, 17, Glenthorne Road, New Southgate, N.

South Essex Gliding Club (80, MEDWAY ROAD, BOW, E.).

FOR the present the membership of the above club is complete. As soon as the construction of the club's glider is finished next month a general meeting will be held at the Alexandra Hotel, Stratford, E., when any prospective members will be welcomed. The exact date of the meeting will be announced as soon as possible.



British Officers at Rheims.

ON the 18th inst. Col. Fairholme and Capt. Brooke-Popham paid a visit to Rheims, where they were shown round by Capt. Chaunac. They witnessed flights by Lieut. Cammerman, Pierre de Bricey, Marlin and Seguin. Each was also taken for a short flight by Lieut. Menard.

An English Pilot at Buc.

ON Monday last Gordon-Bell made another very fine cross-country flight on a R.E.P. monoplane, flying above Buc, Guyancourt, Voisins-le-Bretonneux, Chateaufort, and Toussus-le-Noble.

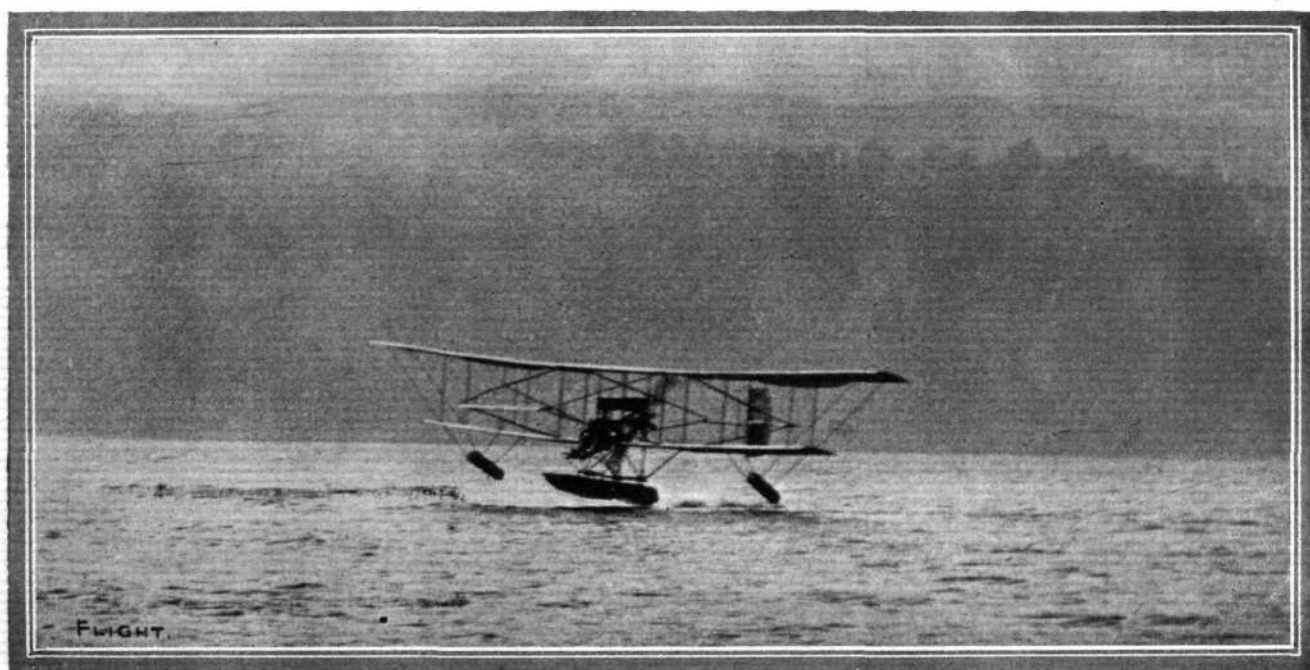


Photo by Herbert and Son, Bowness.

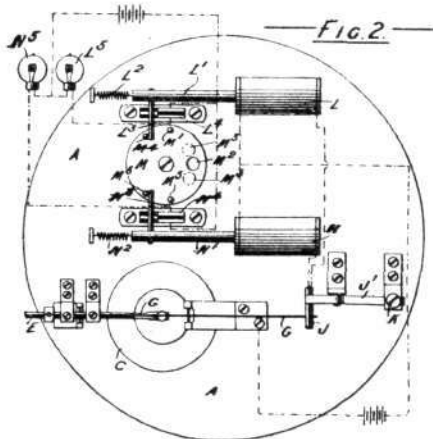
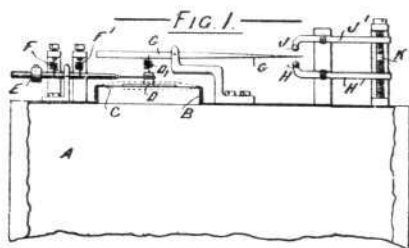
HYDRO-AEROPLANES AND LAKE WINDERMERE.—Mr. E. W. Wakefield's Avro biplane at the moment of alighting on the water of Lake Windermere after a long flight.

BRITISH PATENTS.

Specifications Selected and Abridged by James D. Roots, M.I.Mech.E., Thanet House, Temple Bar, London.

The first date given is the date of application; the second, at the end, the date of the advertisement of the acceptance of the complete specification.

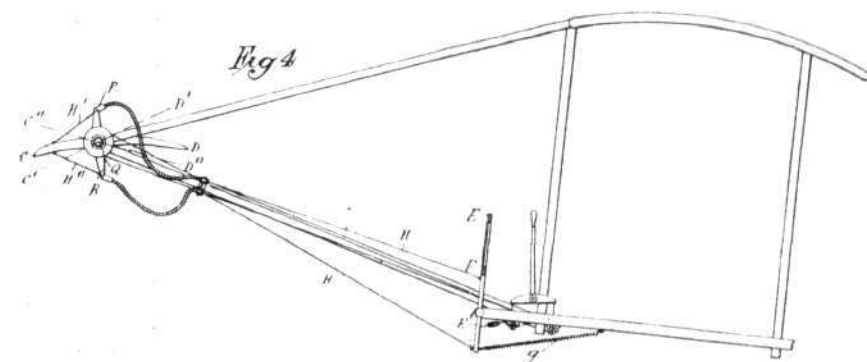
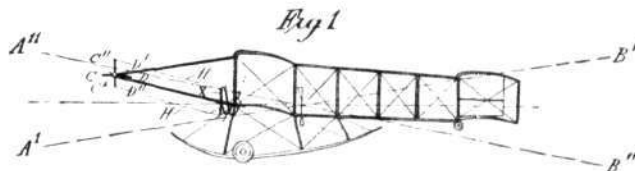
29,874. October 23rd, 1910. Improvements in Apparatus for Indicating Increasing or Decreasing Atmospheric and similar Pressures. H. L. Short and A. E. and H. O. Short, 56, Prince of Wales' Mansions, Queen's Road, Battersea Park, London.—The object of this invention is an apparatus whereby increasing or decreasing atmospheric pressures may be continuously indicated either audibly or optically. The instrument



is especially applicable for use on board flying machines, airships and balloons, and is intended to communicate to the pilot in a continuous manner whether the machine, which he is in charge of, is rising in altitude or descending, or whether remaining at a constant distance above the earth. In this form of statoscope a valve to the air reservoir is opened automatically when the pressure contained in the reservoir is changed by increase or decrease compared with the atmospheric pressure to a predetermined extent, and an electrical relay is provided for operating with greater precision and power first the means for indicating the speed and direction of the change in pressure, *i.e.*, rising or falling and for opening and maintaining open the valve for restoring the air reservoir to atmospheric pressure and for returning the instrument to a normal position. Figs. 1 and 2 are respectively sectional elevation and plan of the statoscope constructed in accordance with this invention. A is the air reservoir which is formed with an annular flange, B, over which a flexible diaphragm, C, is attached and to the centre portion of the diaphragm a coupling, D, is connected which communicates with one end of a balancing lever, E, of such proportions and so counter-balanced by a weight, E', and springs, F, F', that the vibrations communicated to the diaphragm are balanced in their movement by the balancing lever the moment of the parts, C, D, E, E', and the tension of springs, F, F', being equal. The coupling, D, is attached by a spring, D', to an indicating lever, G, and the opposite end of

which is between two electric contacts, H and J, carried on adjustable levers, H' and J', adjustable so as to separate or project the contacts, H and J, by means of a right and left hand screw, K. L is a coil around a solenoid, L', and the winding communicates with contact, H. When the indicating lever, G, descends so as to touch the contact, H, a current is passed through the exterior wind of the coil, L, and causes the solenoid, L', to be drawn into the coil thus extending a spring, L', attached to the solenoid, L'. A projecting arm, L', carried by the solenoid, L', is brought into brush contact with conducting metal, L', and in so doing completes an electric circuit which illuminates an electric lamp, L', of a red colour and as the air contained in the reservoir has moved the diaphragm, C, outwards if a red light is shown, the surrounding atmosphere has diminished in pressure since the previous reading or signal. The continued movement of the solenoid, L', brings the arm, L', into contact with a pin, M', on a valve disc, M, causing the disc to rotate and bring an aperture, M', to coincide with an aperture opening to the reservoir, M', dotted lines Fig. 2. The coinciding of the apertures restores the air reservoir to atmospheric pressure and brings the indicating lever, G, back to its normal position as shown in Fig. 1, breaking the electric circuit passing through the contact, H. The solenoid, L', is therefore allowed to return to its normal position, Fig. 2. This cuts off the current from the lamp, L', and so the red light becomes extinguished. When a change from decrease to increase of pressure occurs, then the flexible diaphragm, C, moves in an inward direction. A contact is made by the indicating lever, G, with the contact, J, and an electric current is led to the outer winding

the action of the atmosphere on it during flight, this pressure varying directly in proportion to the square of the speed. Many attempts have been made to utilise this pressure to maintain the stability of a flying machine; it has been proposed to automatically regulate the steering rudder by means of a member which is acted upon by the wind, and aeroplanes having the supporting planes or wings elastically connected with the frame so that a part of the wings may be lifted and the incidence automatically varied. In this invention the pressure resulting from the action of the atmosphere during flight is utilised to determine (1) the position of the elevating rudders, with the object of maintaining the longitudinal axis in any given determined position; and (2) the position of side-guide planes, in order to prevent excessive inclinations. The machine, diagrammatically shown in Fig. 1, is provided with an engine to drive it at a speed of, say, sixteen metres per second; the elevation rudders are in an approximately horizontal position, and flight is horizontal. If the aviator turns the elevation or altitude rudders in the direction C', D', and owing to this brings the longitudinal axis of the machine into the position indicated by the line A', B'; then the speed of the machine, now sliding in a downward incline, will commence to increase. On the other hand, if the aviator turns the elevation rudders in the direction C'', D'', and brings the machine into the position A'', B'', then it will rise and speed will diminish. These modifications of the speed are employed in order to maintain the longitudinal stability. For this purpose a small plane, E, F, is arranged as much as possible outside the stream of air formed by the propellers, so that all the pressures to which it is subjected during flight should be a function of the speed



of a coil, N, which through the medium of a solenoid, N', spring, N', projecting arm, N', conducting metal, N', and pin, M' and M', causes similar movements to be effected, except that instead of illuminating the lamp, L', the lamp, N', becomes illuminated. —December 27th, 1911.

30,139. December 28th, 1910. Improvements in Flying Machines. Nicholas De Benois, 15, Glinka Street, St. Petersburg, Russia.—Any surface or body on a flying machine is subject to pressure resulting from

of the machine. This plane is connected to the elevation rudders by means of rods, H, H, and a lever. Some elastic device, g, maintains, or tends to maintain, the regulating plane, E, F, in its primary position. The rods, H, are arranged that on any increase of the pressure on the plane, E, F, the latter moves and turns the elevation rudders so that the direction of their curves is adapted to bring about the raising of the machine, and with any decrease it returns through the tension of the elastic device, g, to its primary

position, and rotates the elevating rudders so that they cause the descent of the machine. Let it be supposed that, in view of certain circumstances, the position of the longitudinal axis of the machine has changed, and has taken an upwardly-inclined position, A^1, B^1 . The speed of the machine falls immediately. As a result of this the pressure on the regulating plane, E, F, which has changed in proportion to the square of the speed, will decrease immediately, and the elevation rudders, under the action of the spring device, g, will move in a downwardly-inclined direction, C^1, D^1 , and the longitudinal axis of the machine will immediately decline from the

position occupied by it and several moments afterwards will return to the primary horizontal position. Let it be supposed, on the other hand, that a certain power has inclined the axis of the machine in a downward direction, A^1, B^1 . The speed of the machine at once increases. The pressure borne by the regulating plane increases, the elevation rudders will turn in an upward direction, C^1, D^1 , and several moments afterwards the machine will again occupy the primary horizontal position. Let it be supposed, further, that the aviator, without touching the elevation rudders, slows down the speed of the motor. The speed of the machine, owing to

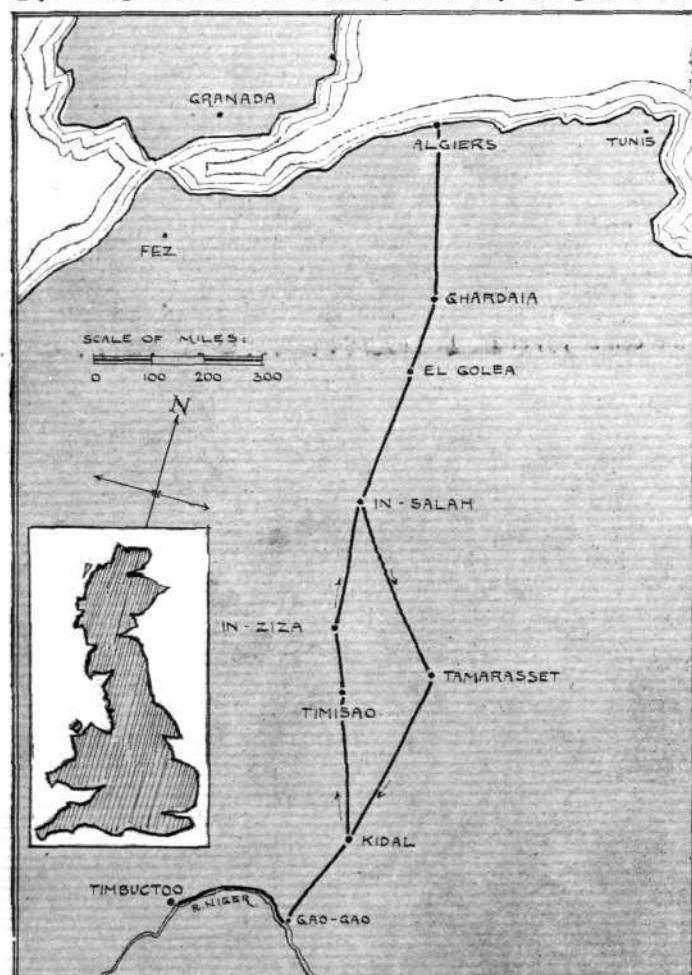
such a slowing down, will decrease and the elevation rudders will turn in a downward direction, C^1, D^1 . As a result of this the axis of the machine will at once commence to incline in a downward direction, A^1, B^1 . Its inclination to the horizontal will stop on its reaching the angle at which the speed of the machine will return again to the normal speed of sixteen metres per second. From this moment the elevation rudders, having again occupied the normal horizontal position, will automatically rectify all the declinations of the axis of the machine from the new, now somewhat inclined, position of it to the horizontal.—December 27th, 1911.



EXPLOITING THE SAHARA DESERT.

FOR the purpose of determining the best route for aeroplanes across the Sahara Desert, a young Frenchman, Mons. le More, has, with two native companions, accomplished a return journey across that barren waste, a distance of nearly 4,000 miles. As a result of his very perilous and arduous trip, which occupied thirteen months, the daring young Frenchman is fully convinced of the possibilities of a trans-Sahara flight, providing that suitable relay stations be arranged. Moreover, he hopes to be the first to perform this journey by aeroplane.

For his journey of exploration he travelled as far as he could by train from Algiers, and then obtained a friendly lift on a waggon to Ghardaia. Then, obtaining a camel and an Arab guide, he started off to cross the desert proper, being joined by another native. Eight days' riding took them to El Golea, where they were given a warm



Map of the remarkable journey across the Sahara Desert recently concluded by M. le More, a distance of 1,200 miles, occupying about 13 months. His journey was undertaken with the object of ascertaining the possibility of flying by aeroplane across the desert if sufficient suitable points could be obtained for relay stations. M. le More is quite convinced that there are no insuperable difficulties in regard to establishing a regular service. He re-traversed the desert by a slightly different route part of the way upon his return to Algiers. Inset Great Britain is shown to the same scale as the map of Northern Africa.

reception by French soldiers. Three days later they reached In-Salah, where they were again kindly received. Accompanied by a French sergeant, they continued on to Tamarasset, and from there to Kidal they journeyed for twenty-nine days without meeting a single human being, while in the ten days spent in getting to Gao there were constant alarms from robber bands, the travellers, however, getting through safely. From Gao to Timbuctoo the journey was by river, and a pleasant variation. After staying at Timbuctoo for three months M. le More visited several parts, and reached Bechar, from whence he returned to Kidal. He started on the return journey across the desert in a different direction, *via* Timisao and In-Ziza, rejoining his outward route at In-Salah. As already stated, M. le More is convinced that it would be possible to establish relay stations and make an aeroplane flight over the route.



TWO-PASSENGER RECORD.

Verrept Raises French Passenger Height Record.

USING his Borel monoplane, Verrept, at La Vidamee, on the 20th inst., carried two passengers, MM. Voigt and Liva, to a height of 1,075 metres. The useful load carried was 215 kilogs., while the total weight, including petrol, &c., was officially checked at 300 kilogs. Verrept intended to try and beat Lieut. Bier's world record of 1,220 metres, but after 18 mins. he found the cold too trying, and had to come down. He had, however, beaten Moineau's French record of 876 metres.

Fischer does Better.

ON the 23rd, at Bouy, Fischer, on his Henry Farman biplane, attacked the double-passenger height record, and took his two friends, MM. Loygorri and Ram, up to an altitude of 1,400 metres. He thus beat the world's record, but only held it for a few hours, as at Rheims, a few kilometres away, Prevost was making preparations for a similar flight, with the success seen below. Fischer will, however, have another try for the record shortly.

But Prevost Beats them both.

ALSO on the 23rd, but at the Courcy-Betheney ground, near Rheims, Prevost attempted to beat Lieut. Bier's record, and by taking up Lieut. Brat and M. Besnard to 2,200 metres he secured the right to the title of world's record holder.

His mount was a Deperdussin monoplane, fitted with Gnome engine and a Rapid propeller. The start was made at a quarter past three, when although there was little wind, a thick mist made the conditions uncomfortable for the flyers. At 300 metres high the machine disappeared from view, but another couple of hundred metres higher the record breakers found themselves under a bright blue sky. In 23 minutes a height of 1,750 metres had been attained, and four minutes later the barograph registered 2,000 metres. Prevost kept the machine climbing until 2,200 metres had been reached, and then started to come down in a spiral *vol plané*. He suddenly found himself above the towers of Rheims Cathedral, and taking his bearings by this landmark, found his way to his hangar, before which he landed, after being in the air 38 minutes. Although the passengers stated they had had a most enjoyable trip, they complained very much of the cold.

This is one more triumph added to the sheaf of Deperdussin records.



National Subscription Proposed in Germany.

THE annual report of the Potsdam Chamber of Commerce points out that the German aviation industry is sadly in need of support, and whereas there are only two sources of demand for machines (a) from the Military Authorities and (b) from Prize Seekers, it is necessary that the Government should spend at least three million marks in purchasing aeroplanes. One of the German newspapers has taken up the idea and suggested that a national subscription similar to that got up for the Zeppelin airship should be organised for the purpose of raising a fund of five million marks for military aviation.

Ae.C.F. PILOTS.

BELOW we publish a further list of the French pilot certificates issued, which goes up to No. 565, and includes the certificates

granted up to July 28th last. The preceding lists were given in our issues of February 4th (1-354), March 11th (355-400), May 20th (401-439), August 19th (440-469).

References.

Country.—Am. = United States; Aus. = Austria; Br. = Great Britain; Bz. = Brazil; Ch. = Chili; Fr. = France; Ger. = Germany; Ho. = Holland; It. = Italy; Rus. = Russia; Sw. = Sweden.

Machine.—Ant. = Antoinette; Bl. = Blériot; Bo.-La. = Bonnet-Labranche; Breg. = Breguet; Cau. = Caudron; Dep. = Deperdussin; Guy.-V. = Guyot-Verdier; Han. = Hanriot; H. Far. = Henry Farman; M. Far. = Maurice Farman; Mor. = Morane; Nieu. = Nieuport; Sav. = Savary; Som. = Sommer Tr. = Train; Vois. = Voisin; Wr.-A. = Wright-Astra.

Name.	Country.	Date of Birth.	Where Born.	Machine	Qualified.	No.
Alincourt, Louis Ed. d'	Fr.	18 My., 78	Allonagne	Han.	29 Ap., 11	488
Allard, Maurice	"	15 Ma., 83	Chateaufort	Cau.	29 Ap., 11	480
Avalos, Manuel	Peru	2 Au., 85	Santiago	Bl.	28 Jy., 11	558
Bares, Joseph Ed.	Fr.	27 No., 72	El Azul, Arg.	M. Far.	28 Jy., 11	543
Battini, Gabriel	"	16 No., 82	Grand Mont-rouge	M. Far.	24 My., 11	508
Bellemois, George L. A.	"	21 Ju., 80	Paris	Bl.	28 Jy., 11	546
Bernard, Auguste	"	28 Ap., 85	Lyon	Som.	23 My., 11	505
Bonamici, Lionello	It.	"	"	Bl.	6 Ju., 11	510
Bonnier, Marc	Fr.	19 Fe., 87	Paris	Tr.	29 Ap., 11	478
Borsalino, Gabriello M.	It.	14 Ap., 77	Alexandria	Dep.	6 Ju., 11	512
Briey, Franc E. de	Fr.	16 Jy., 88	"	H. Far.	24 My., 11	492
Buschtatter, Adalbert	Aus.	20 Ap., 83	Salzburg	Som.	20 My., 11	496
Carlin, Louis Victor	Fr.	7 Ma., 78	Beaune	M. Far.	28 Jy., 11	554
Challe, Maurice J. J.	"	28 Jy., 79	Auxerre	H. Far.	15 Ju., 11	523
Chambenoist, Marcel	"	17 Fe., 87	Saints	Mor.	28 Jy., 11	557
Chanteloup, Pierre	"	29 Jy., 90	Beaune	Cau.	28 Jy., 11	549
Chapelle, Jacques	"	14 Jy., 81	Tebessa	Dep.	28 Jy., 11	547
Chausse, Paul	"	2 Au., 90	Sakamody, Al.	Som.	15 Ju., 11	519
Chavagnac, Elie	"	6 De., 79	Nyons	Nieu.	28 Jy., 11	551
Chavez, Eduardo	Peru	18 Jy., 88	San Paulo	Bl.	28 Jy., 11	559
Chevalier, Joseph	Fr.	24 Ma., 88	Caen	Bl.	15 Ju., 11	515
Corso, Emmanuel	"	2 Ma., 90	Toulouse	Han.	15 Ju., 11	529
Dancourt, Pierre H.	"	9 Au., 79	Troyes	Bl.	15 Ju., 11	520
Debener, Marcel	"	23 Se., 90	"	Sav.	28 Jy., 11	562
Deloche, Robert D.	"	9 Ja., 92	Charleville	Cau.	15 Ju., 11	526
Derome, Paul	"	5 No., 83	Bouvignies	Tr.	29 Ap., 11	477
Despres, Emil M. L.	"	16 Ju., 81	Guerche	Dep.	15 Ju., 11	527
Driancourt, Marie L.	"	17 De., 87	Lyon	Cau.	15 Ju., 11	525
Espanet, Gabriel	"	17 Fe., 83	Marseille	Nieu.	1 Jy., 11	532
Fournie, Jacques P. S.	"	14 Au., 81	St. Benoît, Tarn	H. Far.	24 My., 11	502
Francq, Robert de (Baron)	"	2 Oc., 85	Vivry	Bl.	29 Ap., 11	481
Gailliard, Jean L. C.	"	26 Ju., 91	Paris	Dep.	24 My., 11	504
Gardey, Marcel	"	13 Ju., 83	Dijon	Tr.	20 Ap., 11	482
Garsonnin, Louis	"	21 My., 92	Paris	M. Far.	28 Jy., 11	555
Gelmetti, Attilio	It.	11 My., 76	Rivoli	Han.	1 Jy., 11	531
Giraud, Etienne	Fr.	10 No., 65	Rocheport	Bl.	24 My., 11	493
Gitsels, Robert	Ger.	28 Au., 80	Crefeld	H. Far.	7 Jy., 11	541
Gourlez, Alex. E. A.	Fr.	13 Se., 86	Montigny	Breg.	15 Ju., 11	521
Guidard, Ulysse P.	"	18 Jy., 87	Cousances	Han.	29 Ap., 11	487
Guilband, Charles J.	"	27 De., 77	Nantes	Cau.	15 Ju., 11	518
Hamilton, Henrik D. (Count)	Sw.	15 My., 78	Baseback	Breg.	7 Jy., 11	540
Hechtischer, Louis	Ger.	25 Au., 91	Selb	Bl.	20 Ap., 11	489
Hubbard, Gardner	Am.	18 Ap., 78	Boston	Bl.	6 Ju., 11	513
Issartier, Marcel	Fr.	8 Ma., 88	Souchamp	Dep.	1 Jy., 11	531
Janoir, Louis	"	2 Au., 85	Lugny	Bo.-La.	28 Jy., 11	553
Joly, Charles E. M.	"	3 Oc., 99	Algiers	Vois.	15 Ju., 11	530
Kieffer, Charles E.	"	21 Ju., 90	Chateaufort	H. Far.	24 My., 11	503
La Chapelle, Duval	Am.	28 Ma., 70	Detroit	Wr.-A.	23 Ma., 11	470
Lacombe, Pierre	Fr.	20 Ap., 87	St. Livrade	Dep.	1 Jy., 11	534
Lastours, Henri R. L. D. de	"	28 No., 90	Marval	H. Far.	28 Jy., 11	552
Le Lasseur de Ranzay, G.	"	26 Au., 85	Paris	Bl.	29 Ap., 11	479
Lelievre, Eugene M. L.	"	15 Ja., 84	Bourges	Bl.	15 Ju., 11	522
Lemasson, Pierre M.	"	20 Ju., 72	Plessala	Cau.	24 My., 11	506
Leonet, Victor L.	"	15 Ap., 93	Paris	H. Far.	29 Ap., 11	485
Leprince, Paul	"	11 Ma., 71	Lille	Nieu.	24 My., 11	494
Lieutard, Henri	"	15 Jy., 81	St. Amans	M. Far.	24 My., 11	497
Mallet, Joseph A. P.	"	3 Ju., 81	Bordcaux	Bl.	24 My., 11	490
Manisero, Romolo	It.	10 Ma., 81	Pocapaglia	Bl.	7 Ap., 11	473
Maron, Pierre H.	Fr.	20 Jy., 84	Paris	Sav.	24 My., 11	495
Migaud, Gabriel	"	12 My., 80	Marreuil	Breg.	24 My., 11	501
Moineau, Rene L.	"	11 Au., 87	St. Jacques	Breg.	28 Jy., 11	554
Molina, Eduardo	Ch.	21 Ju., 85	Santiago	Bl.	28 Jy., 11	561
Moller, Georges	Bz.	5 Oc., 76	Rio de Janiero	H. Far.	20 Ap., 11	486
Monakoff, Boris	Rus.	21 Ma., 87	Kazan	Dep.	28 Jy., 11	565
Montalent, Olivier de	Fr.	15 Se., 90	Poncherolles	Breg.	24 My., 11	509
Morel, Paul F.	"	24 Se., 74	Sartene	Han.	15 Ju., 11	524
Noe, Arthur G. M.	"	14 Fe., 81	Nantes	H. Far.	24 My., 11	498
Olivier, Louis	"	3 No., 61	Nevers	Bl.	28 Jy., 11	556
Paillote, Edouard C. L.	"	24 Au., 80	Mascara	H. Far.	15 Ju., 11	516
Partiot, Gerard	"	24 No., 80	Barcelona	Sav.	24 My., 11	499
Perrigot, Jules	"	3 No., 61	Vimontiers	M. Far.	28 Jy., 11	542
Pierce, Samuel S.	Am.	23 Ja., 87	Wellesley Hills	Bl.	23 Ma., 11	471
Porcheron, Louis A.	Fr.	5 Fe., 92	Odessa	Bl.	28 Jy., 11	550
Porte, John Cyril	Br.	26 Fe., 84	Bandon	Dep.	28 Jy., 11	548
Pourpe, Marc M. E. A.	Fr.	17 My., 87	Lorient	Bl.	28 Jy., 11	560
Prevost, Maurice	"	22 Se., 87	Rheims	Dep.	29 Ap., 11	475
Prevoteau, Georges	"	25 Oc., 88	Etampes	Far.	24 My., 11	507
Raevsky, Alex.	Rus.	10 My., 87	Kharkof	Bl.	1 Jy., 11	539
Rey, Philippe A. P.	Fr.	30 No., 71	Lesparre	Tr.	15 Ju., 11	517
Richet, Albert	"	10 De., 88	Paris	Breg.	15 Ju., 11	537
Robinet, Jean	"	26 Ma., 90	Niort	Som.	29 Ap., 11	476
Rochette, Jacques	"	3 My., 81	Montceau	Ant.	28 Jy., 11	564
Rolland, Marcel E.	"	21 My., 81	Bellevue	Bl.	28 Jy., 11	545
Ruby, Frederic L.	"	22 De., 83	Tassin	H. Far.	15 Ju., 11	514
Seguin, Augustin L.	"	6 Oc., 89	Lyon	H. Far.	15 Ju., 11	528
Sourdeau, Alexandre	"	14 Au., 74	Migne (Indie)	Bl.	29 Ap., 11	474
Touzet, Etienne	"	5 Se., 55	Algiers	H. Far.	29 Ap., 11	485
Vandamone, Constant	"	17 Fe., 82	La Madeleine	Breg.	1 Jy., 11	535
Van Meel, Marinus	Ho.	28 No., 86	Rotterdam	H. Far.	6 Ju., 11	511
Verdines, Emile	Fr.	27 De., 83	St. Denis	Mor.	1 Jy., 11	536
Verdier, Ludovic L.	"	19 No., 82	Boisemont	Guy.-V.	2 Jy., 11	538
Vergnecault, Octave	"	10 Oc., 84	Paris	Dep.	28 Jy., 11	563
Vimard, Eugene	"	1 De., 75	Paris	Bl.	29 Ap., 11	484
Vittoz-Gallet, Georges	"	14 Jy., 90	Bourg	Han.	24 My., 11	500
Von den Vaero, Max. J. H.	"	16 Oc., 79	Jurancon	Bl.	24 My., 11	491

AIRSHIP AND BALLOON NEWS.

"Lieut. Selle de Beauchamp" Out Again.

THE French military dirigible "Lieut. Selle de Beauchamp" was out for some further trials on Tuesday last. It started off at 9 o'clock when there was a nasty mist over the ground, and several times a circuit, comprising Moisson, Rosny and Mantes, was covered. At half-past eleven, however, the mist gave way to an unpleasant rain and then it was decided to come down.

More Dirigibles for Germany.

FROM Berlin it is reported that the German Military Authorities have purchased the Siemens Schuckert and also the revolving shed at Biesdorf. The airship will be sent to Konigsburg eventually. The Government have also ordered from the Siemens firm two more dirigibles, one of which will be stationed at Thorn and the other at Posen.

German Airship Manœuvres in March.

A SERIES of manœuvres extending over six weeks are to be commenced in March at Cologne, with the dirigibles "Z 2," "M 1," and "M 2." During the winter several modifications are being carried out with these vessels, the "Zeppelin" having her rudders and elevators rebuilt in accordance with the design successfully tried on the "Schwaben." The three airships at Metz, "Z 1," "P 1," and "M 3," have also been undergoing reconstruction.

The Gordon-Bennett Balloon Race.

FOR the German Eliminating Trials for the Gordon-Bennett Balloon race, 26 entries have been received and trials will take place on April 28th at Dresden and Leipsic simultaneously. Those who perform best in these two trials will have to compete again at Whitsun starting from Breslau in order that the two defenders who, with Herr Gericke—last year's winner—will form the German team.



Consul Gustav P. Stollwerck, whose unique photographs from his "Dunlop" balloon we are publishing (one appeared as our frontispiece on January 13th), and on the right Mr. Fabig; a snap secured at a height of 10,000 ft. on Oct. 3rd in the "Dunlop" balloon.

FOREIGN AVIATION NEWS.

£40,000 for French Naval Aviation.

THE French Naval Authorities are including in their estimates for the current year the sum of £40,000 for experiments with aeroplanes suitable for naval work. It is proposed to acquire a flying ground on the coast, while further alterations are to be made to the warship "Foudre," to fit her as a mother vessel for aeroplanes.

The Aero Club of France Grand Prix.

THE Committee of the Aero Club of France have been considering the question of organising a big event for 1912, and has decided to hold a race over a cross-country circuit of between 100 to 150 kilometres, to be covered two or three times.

Aero Club of France Presents Medals.

IN addition to the various medals which have been presented by the Aero Club of France during the past year in connection with certain meritorious performances several medals have been awarded as a result of the year's work. Silver-gilt medals have been allotted to the world's record holders for 1911, including MM. Nieuport, (speed), Gobe (distance), Fourny (duration) and Garros (height). Silver-gilt medals go to Senator Reymond, M. Etienne Giraud, Capt. Bellenger, Naval-Lieut. Conneau, Lieuts. Princeteau, De Rose, de Malherbe, Lucca, Menard, and Mdlle. H. Dutrieu. Silver medals are given to Mdlle. Jane Herveu, and a number of gentlemen who rendered assistance to the Aero Club of France as observers, &c.

More Military Aeroplanes Wanted for France.

ACCORDING to M. Millerand, the Minister of War in the new French Cabinet, a still larger sum than was put forward by the old Minister of War is to be asked for by the Government, in order that military aviation may be placed on a still more sound footing. It is suggested that the sum voted for Military Aeronautics should be between 22,000,000 and 23,000,000 francs (about £900,000). The dirigible programme will remain unaltered, but more attention is to be given to the military aeroplane, or avions.

Monoplanes at Nice.

Two good flights were witnessed by the promenaders on the front at Nice on the 22nd inst. In the morning Morin on his Blériot carried Dr. Bertrand along the Promenade des Anglais and then over the jetty, afterwards returning to the California aerodrome. Later Poumet on a Morane machine also flew over the same course. Several other aviators have taken up their quarters at the California ground for the winter.

Practising for Altitude Records.

A DETERMINED assault was made on the altitude record by Brindejone des Moulinais on the 16th inst. Soon after midday he started on his Morane-Saulnier monoplane and easily got up to a height of 2,500 metres. Then snow made the climbing very slow, and after reaching 3,250 metres the aviator was unable to continue, as the ice which had settled on his goggles made it impossible for him to see.

Honours for Mdlle. Dutrieu.

NOT only has the Aero Club of France decided to present Mdlle. Helene Dutrieu with a gold medal, but the Aero Club of her national country, Belgium, is to give her a special plaque, while she also visited Brussels last week in order to be presented to King Albert.

Bielovucic Turns Monoplanist.

AFTER remaining true to the biplane for a very long time, Bielovucic has now taken up the monoplane and is learning to fly a Deperdussin machine at Pau. At his second attempt on the 18th inst., he was flying at a good height over the country round the aerodrome in the direction of Angeles.

Honouring a Pioneer.

AT Versailles, the other day, there was a pleasant gathering when M. C. Ader, the designer and builder of the historic "Avion," was entertained to dinner by Col. Hirschauer. General Roques presided; among the large number of *officiers aviateurs* present were Capt. Felix and Lieut. Clavenad.

Pau to Lourdes and Back.

MR. CORBET-WILSON, the well-known Irish sportsman, a pilot at the Blériot school at Pau, on Monday flew from Pau to Lourdes and back, turning above Pic-de-Fer at an altitude of 1,200 metres.

An Improved Starting Arrangement.

M. ETIENNE GIRAUD, who has made some very long excursions from Pau on his Blériot machine, has invented an arrangement by which he is able to get away without any external aid, there being no further need to hang on to the machine at starting. He is giving the idea a thorough testing now.

At the Blériot Military School at Pau.

ON Monday, Lieut. Tretarre was flying for an hour at the Blériot military school at Pau, practising for his superior certificate, and Lieut. Massol meantime flew from Pau to Orthez and back.

A New French Superior Pilot.

ON the 19th inst. Pierre Divetaim, on a Goupy biplane, made his first test for his superior military certificate. His course was from Juvisy to Artenay and he covered the 150 kiloms. stipulated by the revised regulations in two hours. His average height was 900 metres.

A Four-seated Astra-Wright.

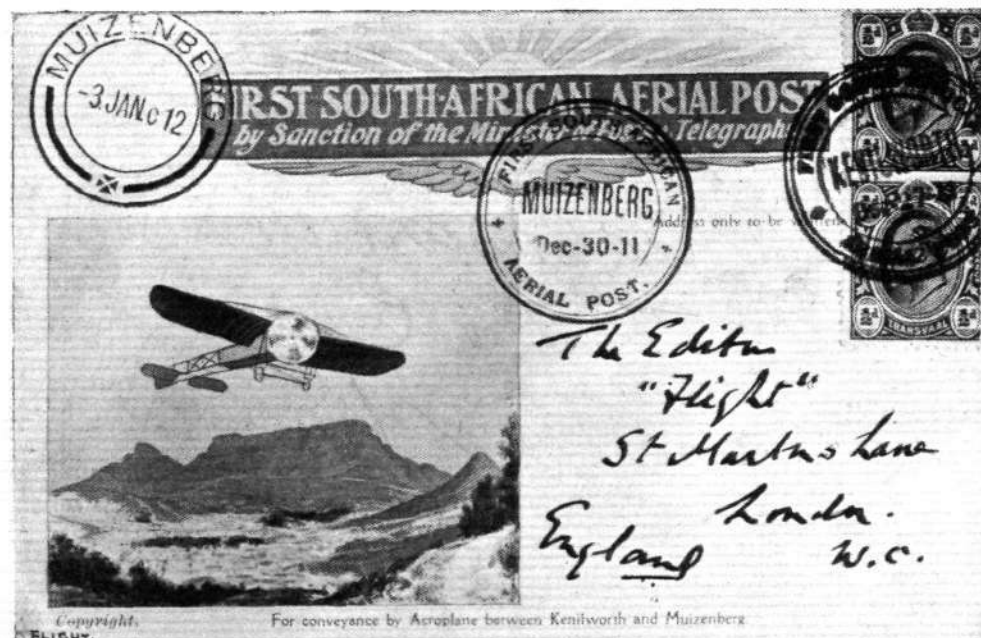
AT Villacoublay, on the 19th inst., Gambert was testing a new Wright biplane, fitted with four seats, built by the Astra firm. With Colonel Bouttieaux as a passenger, it developed a speed of 90 k.p.h. during its first trial of 20 minutes, while a perfectly satisfactory landing was made at a speed of 30 k.p.h.

A Baby Blériot.

ON Saturday, at Etampes, Perreyon was testing a new small monoplane, type XXVII, which has been specially built for use by Barrier during his American tour. The fuselage is entirely covered in, and with a 50-h.p. Gnome engine the monoplane can attain a speed of 130 k.p.h.

A Long Flight at Pau.

LEAVING Pau Aerodrome at half-past one on Saturday last, on his Blériot monoplane, Etienne Giraud flew out to sea and along the coast to the Contes light-house. On his return journey he struck



A greeting to the Editor of FLIGHT per the first official South African Aerial Post. This comes to hand this week with "Aerial Greetings for 1912," and a round robin of signatures from Guy Livingstone, C. Compton Paterson, and E. F. Driver, under whose auspices this popular departure was carried out.

mist, but steering by his compass eventually found his way back to his starting point and landed, after being in the air for a little over 2½ hours and covering 230 kiloms.

Mme. de la Roche over Paris.

ON Saturday, Simon took up Mme. de la Roche, well known at one time as a biplane pilot, on his Blériot monoplane, and while in the air suggested a *balade* over Paris. On their return to Issy Simon indulged in one or two spectacular tricks before landing.

Crombez Reaches Brussels.

ON the 16th Crombez reached Brussels on his Deperdussin monoplane, having continued his journey from Taintegnies, just by Tournai. He covered the 100 kiloms. from that place to the Berchem flying ground near Brussels in exactly one hour.

The Prince Henry Aerial Cup.

THE Challenge Trophy offered by Prince Henry of Prussia in connection with the circuit of the Higher Rhine will be the work of the sculptor Korschmann. If won by the same aviator two years in succession it will become his absolute property.

A Long Double Passenger Flight in Germany.

ON Monday at Johannistahl a new German record was set up by Herr Grulich flying a Harlan monoplane. With two passengers on board he succeeded in keeping up for 2h. 2m. 45s.

Garnier on the Sea Wall.

WHILE flying over San Sebastian on the 18th inst., Garnier found his engine slackening and commenced to come down. He tried to glide into the aerodrome but was a little bit out in his reckoning and landed on the sea wall. The pilot was uninjured and was soon in a safe place. His machine, however, had to be left for some time to be washed by the waves, and was somewhat damaged before it could be rescued.

An Aerial Post in Tripoli.

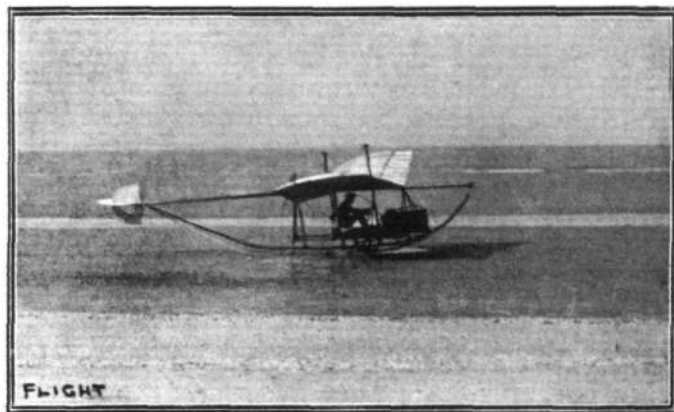
THE aeroplane has been put to a somewhat novel use by the Italian authorities in Tripoli. A proclamation has been prepared assuring the Arab tribes of Italy's friendly attitude towards them, and stating that her sole desire is to develop the resources of the country. After copies had been made in Arabic a difficulty arose as to how to get them to the Arabs, but this was overcome by the aviators taking them and dropping them into the Arab camps.

A Fatal Accident in California.

ACCORDING to a cable message, Mr. Rutherford Page an amateur aviator, while flying at the Los Angeles meeting on Monday, fell from a height of 1,500 feet, and sustained fatal injuries.

Garros Flies over Brazilian Mountains.

A FEW days ago Garros, on his Blériot monoplane, flew from Rio de Janeiro to Theresopolis, a whaling station about 100 kiloms. away, crossing the Serra des Orgoas, which are over 1,000 metres high. He afterwards returned to Rio.



The "Tubavion" monoplane, the unique all-metal machine shown by Messrs. Ponche and Primard at the Paris Aero Salon, undergoing tests with M. Marie in the pilot's seat.

Fatal Accident at Senlis.

LIEUT. BOERNER, who met his death at Senlis last week, was a skilful flyer, having qualified for his *brevet* last December, and it is difficult to account for the accident. He was flying his monoplane at a height of about 300 metres on the 19th inst. when it was seen to swerve, turn over, and come down with a crash. The petrol tank burst and the contents caught alight. As the aviator was strapped in his seat he was practically helpless, but some peasants ran to his aid and pulled him to a place of safety, although they were badly burned in doing so. The doctors found that the aviator had sustained severe burns and was badly bruised, but no bones were broken. He was at once taken to the hospital, and it was hoped that he might pull round, but he succumbed to his injuries on Sunday afternoon.

A Death at Juvisy.

ON Saturday last a fatal accident occurred at Juvisy, an over-confident young pupil named Fred Wagner being killed through his machine capsizing while attempting to make too abrupt a turn. The pilot was thrown out, and sustained a fractured skull.

Vedrine as Propagandist.

BEING dissatisfied with the action of the Government regarding military aeroplanes, Vedrine, on Saturday afternoon, secured a large number of bills bearing words to the effect of "Give France More Aeroplanes," and starting off from Issy he flew over to Paris, where he scattered a plentiful supply of the bills over the Chamber of Deputies. The query arises, will he be proceeded against under the new regulations prohibiting the throwing of paper about the Paris streets.

THE KITE AND MODEL AEROPLANE ASSOCIATION.

(27, VICTORY ROAD, WIMBLEDON.)

The Paramount Body to Govern Models in this Country.

OFFICIAL NOTICES.

Registration of Model Aeroplane Performances.—Observed flights can be made on Saturday, February 17th, on Wimbledon Common, at 3 p.m. All applications must be received by the hon. sec. not later than Saturday, February 3rd, on forms which can be had on application.

As there has been so much discussion about record distance and duration, it is expected that would-be record holders will apply to have their flights officially observed and registered under the rules of the Association approved by the Royal Aero Club.

Motor Kite and Wireless Telegraph Corps.—The sub-committee have reported that it is in their opinion desirable to raise the funds for the equipment of this corps. About £800 is required to cover the estimated cost of the whole equipment and upkeep for two years.

The equipment will consist of a 25-30-h.p. petrol-driven motor lorry (which will be capable of carrying 16 men, besides officers and driver), with kites and wireless outfit. The engine that drives the motor will be utilised to drive the winding gear. It is hoped that there is some patriotic gentleman who will come forward and give the sum required, so that the men can get to work and train, and also to place us as a nation first in this section of aerial navigation.

A letter from the Army Council has been received stating that the Council will be glad to avail themselves of the co-operation of the Association (with the Territorial Force), whose public spirit and patriotism they have much appreciated.

It is proposed that Lieut.-Col. Trollope and Major B. Baden-Powell shall be joint commanders of the corps.

Gift of Outfit for Section.—The president, Major B. Baden-Powell, has given a complete man-lifting outfit of his own kites to the association for the use of the corps, and the outfit will be taken over at an early date, and will be used and stored on Wimbledon Common; it will also be used with the motor.

Gentlemen wishing to join this new corps are requested to send in their names at once, as the first squads are nearly complete. Every man will provide his own uniform, which will cost about 30s. It is also hoped to have outfit complete and the men trained in time to go into camp with the Territorials.

Aerial Signalling (Morse Code).—An application has been received from Major Ford-Moore, commanding the Ealing Company, 2nd Territorial Cadet Battalion, Middlesex Regiment, requesting the Association to appoint instructors in kite signalling.

The Council have appointed instructors and will co-operate with the company on Wimbledon Common in signalling with the Pringuer System Morse Code as approved by the Association.

Annual General Meeting.—The annual general meeting will be held early next month, date will be stated in next issue. Nominations of officers and notices of motion must be received by the hon. sec. not later than January 30th.

W. H. AKEHURST, Hon. Sec.



Conducted by V. E. JOHNSON, M.A.

The Petrol Motor.

It would appear at first sight that in this motor must lie the true solution of the model aeroplane motor. It is a motor of this kind which has solved the problem of aerial locomotion as applied to full-sized machines; and if in the case of full-sized machines, then why not models? The size of the smallest *working*-model steam motor is amazingly small; not so the petrol motor—not one, that is, that will work. The number of petrol-driven model aeroplanes that have actually flown is surprisingly small. Personally we only know of two, viz., Mr. D. Stanger's and one constructed by Messrs. J. Bonn and Co. (see FLIGHT, p. 1146, December 30th, 1911). It is worthy of careful note that in the former case the power developed was 1½ h.p. at 1,300 r.p.m., and the total weight of the model 21 lbs. In the latter case the power developed was 1½ h.p. at 1,500 r.p.m., and the total weight 36 to 45 lbs., according as to how the model was fitted with planes, &c. In the former model the engine was a four-cylinder one, and in the latter (we believe) a two-cylinder one; in any case it was not a one-cylinder motor.

Another petrol model with which we are personally acquainted has a two-cylinder motor, power developed 1 h.p. (rather more, in fact), total weight of the model 16 lbs. This model has, however, never been tried in actual flight, but we believe it would fly.

So far as we can learn, no success whatever has as yet attended any one-cylinder petrol motor. Nor should we think any success is likely to attend any such efforts. The vibration is excessive, and it is heavier in proportion than the two-cylinder type, and not so efficient. The question of vibration alone is a very serious one; even a badly-balanced propeller will seriously interfere with, and curtail the length of, flight, to say nothing of shaking loose on the model everything that can be so affected.

Another point to carefully note in the case of the petrol motor is that it is only those of from 1 to 1½ h.p. that have met with any success. And from enquiries which the writer has made there does not appear to be any likelihood of one of a lower power giving any success at all. If this be so, then, so far as a motor for model aeroplanes in anything at all approaching a general use, the petrol motor is ruled out of court.

For large models weighing, say, from some 20 lbs. upwards, this motor can no doubt be successfully applied, and one such model might with great advantage be owned by the larger and more important model clubs, and kept by them for experimental and research purposes. There are difficulties to be overcome in such a scheme, no doubt, but they are certainly not insuperable; and it would, or should, prove a bond of common interest to the club, which individually owned models in the natural order of things can scarcely, perhaps, be said to be.

Referring to model aeroplane motors generally, what the aeromodellist wants to know is *not* some hypothetical h.p. at so many assumed r.p.m., and some unknown pressure which the generating plant may never realise—or if it actually does so, its duration may only be some 5 seconds, but the following items:—(1) What is the *total* weight of the whole necessary plant (generator, fuel, engine, &c.)? (2) What actual propeller-thrust will such a plant give? (3) The duration of such a thrust, and the time during which such is constant, and the manner in which it falls off. Knowing these, it remains to calculate or estimate the approximate weight of the planes, fuselage, chassis, &c., to carry the plant; and if we find (to take a concrete case) that the static thrust of the propeller is 1 lb., the weight of the entire plant 2 lbs., and the total weight of everything 4 lbs., then such a model should most certainly fly. If the total weight is only 3 lbs., then the model should fly well and high; if 5 lbs., the model may fly if the aerofoil surfaces are very efficient, but the model will (probably) not be a self-rising one. Mr. Stanger's propeller gave a static thrust of about 7 lbs.

Notes.

Being compelled through a slight accident to dictate our last week's copy, the writing, we are afraid, must have proved troublesome to the compositor; or, whatever the cause, we are credited with some extraordinary calculations. For $\alpha = 45^\circ$ read 45° , for $40^\circ 33'$ read $42^\circ 33'$, and for $40^\circ 41'$ read $4^\circ 41'$.

We have received from Mr. D. Stanger particulars of an official flight made by his 4-cylinder petrol-driven model. This flight was made under the auspices of the Yorkshire Aero Club in July, 1910. The enclosure sent include the original letter of the club to Mr.

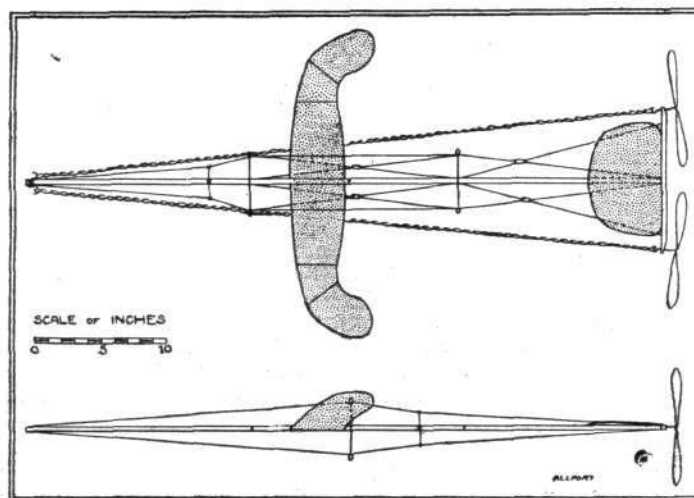
Stanger notifying him of the award of a silver medal as the result of his model's successful flight, and also a cutting from the *Bradford Argus* from which we extract the following most interesting item:—“On one occasion the model sped along the turf at about 16 miles an hour, rose in the air and charged a balloon which was filling in preparation for an ascent later on.” Evidently it recognised its ancient enemy at first sight and went for him for all it was worth. Perhaps the above will convince our sceptical correspondent.

Mr. John Mc. C. Clive sends the following explanation *re* the necessity of fitting a rudder or vertical fin behind the centre of gravity of a tractor-screw monoplane. “The fin is so placed in all monoplanes of the O-P-1-1 type, not so much to resist the unbalanced torque of the motor as to provide a means of maintaining directional stability in the horizontal plane. If not so fitted, the tail of the machine will tend to swing round, using the tractor as a pivot, and cause a head-first dive owing to the centre of greatest resistance to forward motion, *i.e.*, the main planes, being in front. In a tail first, or Valkyrie-type of aeroplane, the point of greatest resistance is in the rear and thus a vertical fin is unnecessary for flight.”

Just so; but Mr. Allport's model, illustrated and described below, flies quite well without a fin—and the greatest resistance to forward motion is still in front. And one would rather conclude that the action to which Mr. Clive refers would be still further accentuated with the propellers behind instead of in front—unless, of course, we consider them (in conjunction with the tail) as counterbalancing this effect. It would be interesting to know the effect of a fin (a *small* detachable one made of aluminium, say) on the very front of Mr. Allport's machine. We should have expected from the type to have seen such a fin there—this being one of the instances in which we should expect a fin to assist in making a model fly *straighter*. At present the model's path is a curved one. If Mr. Allport has not hitherto tried this—perhaps he will not mind doing so and forwarding results: (i) fin right in front; (ii) fin in rear above tail.

The following are the principal details of Mr. C. C. Allport's model (see illustration). Wood, silver spruce; main stick, 4' x ¼" x ⅜"; main plane, No. 19 piano wire, silk covered and varnished; tail, ditto; weight, 7 ozs., made up as follows:—rubber, 3 ozs.; frame ready trussed, 2 ozs.; propellers, 1 oz.; main plane, ⅜ oz.; tail, ¼ oz.; trussing done with No. 6 wire as sold in piano shops, rubber lubricant soft soap and French chalk, camber to main plane ½ in., main plane adjustable for elevation, tail plane fixed, 9-in. propellers, pitch 33½ ins., 1,000 turns. Best flight (measured in a straight line) 1,163 ft.

We have received from Messrs. Mann and Grimmer one of their 7s. 6d. parcels, containing all the necessary parts, together with full directions and drawings for completing and flying their celebrated “Mann” monoplane. The directions, both for making and flying are perfectly clear and explicit, and anyone taking ordinary care and exercising a little patience (an essential qualification for successful model making) should have no difficulty in correctly completing those



Mr. C. C. Allport's long-distance 7-oz. model.

parts which remain to be finished. The only part at all likely to cause difficulty to a novice is the correct twisting of the propeller blades; should he be quite inexperienced in this, and unacquainted with anyone who is, he would probably do well to get the makers to do this for him, as it is always an unwise policy to spoil the ship for the ha'p'orth of tar.

Replies in Brief.

J. ALLCORN.—As you will see from the present and two following issues, the question of a power-generating apparatus for models is being considered. With respect to the method you suggest, your reservoir of aluminium tube with brass ends should be replaced by an all-steel cylinder. An ordinary cycle pump is perfectly useless, as nothing like sufficient pressure could be obtained. Your lamp, as suggested, would probably give you great trouble when travelling through the air (presuming flight possible), and the warming of the air *en masse* is not to be recommended. From some personal experience which we have had with a type of motor very similar to

the one you suggest the duration of any effective run would be nearer 10 secs. than 2 mins. In a word we should strongly advise you not to experiment along these lines. The *engine* proper presents but few difficulties, it is the pressure-generating plant that is the trouble.

C. R. BENNETT.—Glad to hear you are progressing. The method of overcoming the torque generally employed in England is to mount the rubber motor and propeller *slightly* to one side of the motor rod.

ARTHUR WOOD.—Photos received with thanks. Should be interested to hear how far your compressed-air motored-model flew. You are quite right to try the power plant you suggest, viz., a steam engine and flash boiler.

N. BANKS.—Not at present I am afraid.

C. IAN BURRELL.—You will notice that the matter you refer to is about to be dealt with. Thanks for information and photos, which we will make use of later. We have considerable matter in hand already.



PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE.—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of FLIGHT, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

MODEL CLUBS.

Aberdeen Aero Club (387, HOLBURN STREET, ABERDEEN).

BEAUTIFUL weather favoured the meeting on Saturday. Mr. D. Brown obtained an excellent flight of 786 ft. Mr. Wilson made some good flights with a single-screw model measuring 4 ft. long, flying 500 to 600 ft. repeatedly. Next week a competition for duration will be held, various prizes being offered. To-day's (Saturday) meeting will be held at the Links at back of Bathing Station, at 3 p.m., weather permitting.

Aero-Models Assoc. (N. Branch) (15, HIGHGATE AVENUE, N.).

THERE was an altogether unexpected turn-out of flyers and spectators on Saturday last for distance event at Finchley. In all, twenty competitors and twenty-five models. Spectators numbered about ninety, and were pleased with the excellent flying. Winner of 5s. worth of goods offered by R. G. Corder and Co., A. Houlberg, 1,144 ft., and E. R. Brown, second, 812 ft. Owing to fog, five or six machines flew out of sight. D. Smith had the misfortune to lose his fine model after a good flight, which out-distanced him in his endeavour to follow it. H. D. Murray also went away minus one machine, which had been flying in good style. R. L. Rogers provided considerable interest with his excellent flights, as did also all the representatives of the Palmer's Green Model Aero Club, to whom many thanks are due. New Clarke's racer went under tests in the hands of Mr. R. G. Corder, but unfortunately smashed the fuselage when in good trim. Messrs. Root and Partridge put up flights with single-propeller machines, each doing 150 yards straight on several

occasions. L. Tarsk's model provided some amusement by rising to a terrifying height and pancaking. H. C. Fletcher's model flew well, and W. A. Cooke's twin-tractor evidently required alterations and tuning up. Considering bad weather, &c., it was altogether a very sportsmanlike turn-out. Another successful social anticipated for next Saturday, February 3rd, at above address. All interested are invited, and with models and parts. Secretary, Malcolm B. Ross.

Birmingham Aero Club (8, FREDERICK ROAD, EDGBASTON).

OWING to the snow, there was only a small turn-out of model flyers this week-end. Mr. E. Prosser was obtaining flights of about 30 secs. with the Gordon Jones model, Mr. G. Haddon Wood about 200 yds., and Mr. E. Trykle's model an average of about 60 secs. During one flight the model never seemed to get above 15 ft. high, and for quite half its flight, which was exactly 60 secs., it was flying not more than 10 ft. above the ground.

Birmingham readers of FLIGHT are invited to attend the next monthly meeting, on February 3rd, at the Bell Hotel, Phillip Street, at 8 p.m. Mr. E. Trykle will give a short lecture, which will be followed by a discussion. Club's business will also be brought forward, and it is anticipated several interesting models will be on view.

Blackheath Aero Club (12, MANOR ROAD, BROCKLEY, S.E.).

SEVERAL members of the B.A.C. took advantage of the fine weather on Saturday last, and many splendid flights were witnessed at the Kidbrooke ground. Mr. H. H. Pizey started the flying with his new 2½-oz. "single-sticker" which immediately rose to a great



A gathering of the Brighton and District Model Aero Club at Shoreham Aerodrome last Saturday.—The large machine is J. W. Burghope's 21-oz. 'bus.

altitude and flew out of sight. Mr. Pizey is convinced that it will be much easier to make another model than find this one, as, when last observed, it was "well up" over some trees and houses and still "going strong."

Mr. G. Brown, of New Cross, was experimenting with a "Gnat" tractor-screw self-rising monoplane, and Messrs. Woollard, Clark, Egelstaff and Waghorn were flying their usual type models. The numerous spectators included several who evidently lost interest in a neighbouring football match as soon as the flying commenced.

Messrs. Clark and Brough were flying on the Heath as usual, and although they made many excellent flights they did not succeed in "smashing" any records—or models.

Later on they joined the other members at the Lee Aerodrome, where, in spite of the very damp atmosphere (which plays havoc with the rubber and lubricant), Mr. N. Waghorn succeeded in making the necessary flight for his 2nd-class certificate. Mr. Plummer was flying a new single-stick monoplane, and the high flights obtained with this model rivalled those made by this member's 8-oz. cup winner. Messrs. Packham and Dodd were tuning up a new tractor-screw monoplane, but were unable to achieve the same measure of success as Messrs. Dollittle and Whitworth. Messrs. S. Martin, E. Hoch, F. Clarke, and C. B. Holland were also present.

The competition announced for February 24th has been postponed until Saturday, March 9th, when a silver cup will be offered for a "point-to-point" contest. This will be for members only, and competitors will have to fly their models to and from the three points of a triangle—each about 250 yds. apart—and the member who returns to the starting point in the least number of flights to be the winner of the cup.

This competition will be held at the Kidbrooke Ground, and flying will commence at 3 p.m. sharp. Any size or type of model may be used, but no gliding will be permitted, and this event will be postponed unless six or more members complete the first side of the triangle. The committee would like to see more of the members tackling the hydroplane problem, and as soon as some progress is made, a silver cup, presented by Mr. E. Reville, will be offered for a competition with this type of machine.

There will be the usual flying practice and experiments at Kidbrooke, Blackheath, Lee, and Grove Park, and the committee heartily invite all interested in model aviation to visit the B.Ae.C. flying grounds.

The asst. hon. secretary (Mr. L. Brough) will be pleased to supply full particulars of membership to anyone making written application to the above address.

A general meeting will be held on Saturday, February 24th, at 6 p.m., and a convenient place will be announced next week. Every present and prospective member of the Blackheath Aero Club should keep this date open, as some very important business will be discussed, and the Committee hope every member will make a special effort to be present.

New rules and regulations will be proposed, and the chief secretary (Mr. A. B. Clark) will be glad of any suggestions calculated to benefit the club, and these will be submitted to the members at the above-mentioned general meeting.

Brighton and District Model Ae.C. (36, LITTLE PRESTON ST.)

DULL weather was evidently responsible for poor attendance at Brighton-Shoreham Aerodrome on Saturday last. Mr. Bate broke club's duration record by getting flight of 61 secs. with light mono. Previous record, made by Mr. Willis with "Mann" in September last, was 50 secs. Mr. Bate did another flight of 420 yards, and several of 350. Mr. Burghope was out with 2 ft. 2-oz. model, which was much overpowered for trick flying. This machine in one flight looped-the-loop three times. It got up to a tremendous height, about 150 ft., in less than 5 secs. Many spectators were much entertained by its sharp banking and spiral *vol plans*, at about 1 in 3. Mr. Williams' monoplane turned right over repeatedly. It was found that the propellers with which it was fitted had warped, and their pitches were 33 ins. and 21 ins. respectively. With pair of similar propellers made by Mr. Bate, model flew well.

Flying to-day (Saturday) at Shoreham. Mr. John Godfrey, art master at Brighton Grammar School, has joined club. All communications to hon. secretary, A. Von Wichmann, "Kingsleigh," Kingsway, Hove.

Bristol Model Flying (3, ROYAL YORK CRESCENT, CLIFTON).

A MEETING was held on the Downs on January 20th. Excellent high flights obtained in spite of gusty wind by gentlemen present last week and Mr. Smith. Mr. Smallcombe who has been experimenting with bi-cylindrical gliders flew a twin-screw machine of this type which showed remarkable lateral stability. Design of machines and propellers is rapidly improving.

Meetings at Sea Walls every Saturday at 3 p.m.

Conisborough and District Aeroplane Soc. (18, CHURCH ST.)

UNDER the auspices of the society a concert was held in Church Hall on January 16th. The president (Mr. John Brocklesby, J.P., C.C.) made a short speech dealing with the aeroplane and its future, and the hon. sec. (John I. Webster) made a speech dealing with the society, its membership, workshop, performances, certificates and prospects. A sketch, entitled "Cross Purposes," was given by the following members: Misses F. Jackson and D. Clarkson, Messrs. J. M. Walton, J. E. Greathead, C. E. Webster and John I. Webster. Others who contributed to the programme were Misses Nicholson, C. Harrison, C. and G. Appleyard, Messrs. J. C. Auty (Sheffield), J. H. Brocklesby, J. Ryan, S. Harrison and H. D. Brown. By the concert the society cleared over £2.

Dover and District Model Ae.C. (21, GODWYNE ROAD, DOVER).

THE above club held a successful meeting last Saturday; the best flights were made by A. G. Wicks, H. Holman, H. Whorwell, H. D. Davis, and R. Wilson, &c. At the evening meeting it was decided to hold meetings at 2.15 p.m., on the Northfall, Wednesday and Saturday afternoons.

Ealing and District Model Ae.C. (1, QUEEN'S GDNS., EALING, W.)

OWING to absence of half the members at the meeting on the 20th inst., it was decided not to proceed with the election of the committee. Members are urged to attend the flying meeting to-day (Saturday), so that a meeting can be arranged which can be attended by all. Ten members turned up on the 20th, and good flights were obtained by L. Roche, — Beeching, C. Roche, and B. Kirchner. The attraction of the afternoon was Bostock's 0-1-2P-1 model, which flew splendidly, at good altitude and high speed. L. Roche was testing 0-2T-1-1 model, while C. Roche tried "rising-from-ground" monoplane. Two new members were enrolled. Flying meeting to-day (Saturday), at 2.30 p.m., at usual place.

48th Glasgow Troop Boy Scouts' Model Aero Club (285, RUTHERGLEN ROAD, GLASGOW, S.S.).

THIS club started the New Year with renewed activity. On January 1st, at Barrhead Aerodrome, their president, S.M. J. S. Gordon, increased the distance flight to 2,000 feet. Of the series of lectures arranged, the second one was given on January 11th, the subject being "The Model Fuselage," at which every member of the club was present. S.M. Gordon will give the third lecture shortly, his subject being "Chassis Design," and it is requested that all members will attend. On Thursday nights the workshop, where the models are constructed, is making great progress. It is hoped that a paper glider competition will be held soon.

Manchester Model Ae.C. (40, BIGNOR STREET, CHEETHAM).

A LECTURE entitled "The Progress of Mechanical Flight," will be given by Mr. J. Carr in the Y.M.C.A. Building, Peter Street, on Wednesday, January 31st, at 8 p.m. It will be illustrated by lime-light views and diagrams. Members of the club and all persons interested in model flying are cordially invited.

The first model flying meeting will be held at the Aerodrome, Trafford Park, on Saturday, February 3rd, at 3 p.m. It is earnestly asked that every member will do his duty and bring a model in order to uphold Manchester in the flying world.

Palmer's Green and District Model Ae.C. (15, MOFFAT RD., N.).

LAST Saturday the competition of the Aero Models Association attracted half-a-dozen or so of our members to East Finchley. At home, however, there was a good attendance, and good flying was done.

To-day (Saturday) an open club competition for distance will be held at Powys Lane, starting at 3 o'clock. Anyone interested is invited, and will be welcomed by our members. Entrance fees, for members, 2d. per model; non-members, 4d. Points will be given for first, second, and third places in all such competitions, and the half-yearly championship will be decided on the totals obtained by members.

It is Mr. Grimmer who has consented to become president of the club. Last week his name suffered by the substitution of an "h" for "r."

Paddington & Districts Ae. C. (133, BUCHANAN GDNS., HARLES DEN)

AT the Club workshop last week members had an opportunity of inspecting Mr. M. Canning's model biplane, constructed for duration. It is 5 ft. long, 3 ft. span, weight 13 ozs. Two skeins of elastic geared together on either side of the single stick drive a pair of 12 in. propellers, which weigh only ½ oz. the pair. Three thousand turns can be given to each propeller and the duration is three minutes. This model has been tried and flown a short distance and will probably realise expectations when a little more power is added. It will be remembered Mr. Canning won the cup

offered by this club in open competition in 1910 and from the above he evidently means to retain it. It has to be won three times to become the property of the holder.

New members elected last week were Messrs. A. Cannell and L. Senecal. Hon. Sec. W. E. Evans.

St. Mary's Model Ae.C. (THE VICARAGE, KINGSTON, PORTSMOUTH)

THE first monthly competition was held on January 20th. Chief results were as follows: Distance—1, Mr. E. Eburne; 2, Mr. C. Restall; 3, Mr. H. Johnson.

Duration—1, Mr. E. Eburne; 2, Mr. H. Johnson. Mr. C. Restall's machine unfortunately struck a post and smashed, after 4 secs. flight.

Triangular course of about $\frac{1}{4}$ mile. All sides across wind. Four entered, but V. Collett was the only one to complete the course, others were still flying when darkness came on. Mr. S. Robbins officiated as referee.

Salisbury Model Aero Club (39, CATHERINE STREET).

DESPITE the bad weather of last week, some good flying was obtained on Saturday, on a proposed new ground on the Wilton Road, which promises to be a great improvement on any former one.

Members are reminded of the February total distance competition. All models must be ready for sealing by the 30th inst.

Next general meeting on February 6th.

The secretary will be glad to see anyone interested at the above address.

Scottish Ae.S. (Model Aero Club) (6, McLELLAN STREET, GOVAN).

ON Friday evening last week Mr. Wm. Langlands delivered an excellent paper on "Models" which was much enjoyed. A keen discussion followed. On Saturday the first competition was held at Barrhead. Official marks will be published in FLIGHT next Saturday.

The next lecture will be held in the Institute, Elmbank Crescent, Glasgow, on Friday evening, February 2nd, at 8 o'clock, when Mr. Andrew Forson will speak on "Chassis Design." A full turn-out of members is requested at Mr. S. F. Cody's lecture in the Athenaeum on Thursday, February 1st, and particulars can be had from the hon. sec., Mr. Wm. Foster, "Rochelle," Limeside Avenue, Rutherglen. There will be a flying meeting at Ibrox to-day, Saturday, also next Saturday. A full turn-out is requested.

Southgate County School Aero Club (84, BOWES ROAD, N.).

SEVERAL members attended the Aero Models Association Competition last Saturday, at East Finchley, when the club secretary, E. R. Brown, secured second place. Good flights were also made by A. Bartlett and J. Reed, the former losing his model in a tree. It is hoped to arrange a competition for members in a few weeks' time; further particulars later.

Stony Stratford & District Kite & Model Ae.C. (OLD STRATFORD)

OWING to the snowstorm which fell on Wednesday last week, and the rapid thaw on Thursday, the speaker announced for the last meeting was unable to turn up, and as enough members were not present to resolve the meeting into a business meeting it stands

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DR. HANKIN'S LECTURE AT THE AERONAUTICAL SOCIETY.

DR. HANKIN's lecture at the Aeronautical Society was a great success, and it has done its part to help forward the steadily increasing interest that is being taken in the activities of this historic institution. His discourse was essentially a lecture, chatty, interesting, and informative from beginning to end, but not at all of the kind that is easily written about afterwards save by the author himself. His subject was the development of animal flight, and seldom have we heard any lecturer keep so cleverly within the boundaries of his title. If may, perhaps, seem a little unfair to make a remark like this, but we feel convinced that many if not the majority of the audience anticipated something in the nature of a condensed *résumé* of Dr. Hankin's articles in this journal. It was, however, precisely where they began that Dr. Hankin's lecture finished, and the point at which his lecture began is too remote in the ages of evolution even to think about with equanimity.

He illustrated, by means of lantern slides and diagrams, all kinds of fossilized remains of early creatures that have more or less claim to be considered the progenitors of the bird. He showed curious anatomical points of similarity and dissimilarity in favour of one argument and another, and with never-flagging interest, carried his audience in the short space of an hour through a course of evolution that nature took goodness knows how many years to bring about.

A discussion ensued, but it was scarcely as much to the point as was proper to the occasion—which is not, perhaps, surprising, since



Some members of the Scottish Aeronautical Society Model Aero Club and their visitors at their weekly competitions. Amongst the well-known members are Messrs. Mills, Langlands, Donaldson, H. Graham, Balden, J. Gordon, &c.

postponed. The next meeting is on Thursday, February 1st, when the subject is "Aviation, its principles, performances and prospects," by C. C. Allport, being an interchange paper from the Conisborough and District Ae. Society.

Worcester Model Aero Club (VICTORIA INSTITUTE, WORCESTER).

THE club flying ground was covered with snow last Saturday, but in spite of this there was a fairly good attendance, eight models being out. Mr. H. P. Bolton was testing his new 2-ft. racer, which should do great things when tuned up. Messrs. H. Whittaker and F. Smith were tuning their two-propeller models, the latter having the misfortune to break one propeller, and as he had no spares or interchangeable parts his machine was put out of action. Towards the end of the afternoon sparklers were fitted to the machines and some very pretty flights were obtained.

Meeting as usual to-day (Saturday) on Pitchcroft at 3 o'clock, when the point-to-point race, postponed from last week, will take place.

Yorkshire Ae.C. (Model Section) (5A, HULLAND ST., LEEDS).

WILL all members please note that a meeting will be held, irrespective of the weather, in the Drill Hall, Carlton Hill Aerodrome, to-day (Saturday). The secretary will be pleased to meet intending members. Flying during the afternoon. Meeting to start at 4.30 prompt.

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few are familiar with this branch of the subject—and it was more than a little evident that the majority of people would have very much liked to have taken the opportunity of saying a few words about Dr. Hankin's theory of soaring. A really interesting contribution to the discussion was, however, made by Mr. B. G. Cooper, who has especially made a study of insect flight.

A feature of this session's meetings of the Society that is a most pleasing characteristic, as indicative of a vigorous and healthy state of growth, is the support that has been rendered by prominent men who have been invited to take the chair. On this occasion, Sir George Darwin, F.R.S., took the trouble to come down from Cambridge in order to preside at the meeting, and while the Society is able to enlist the sympathy of such men of science there should be nothing to stand in the way of the rapid progress of its work.

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Discussion on Soaring Flight.

THE Aeronautical Society has arranged a discussion on soaring flight to take place at the Royal United Service Institution in Whitehall at 8 o'clock on Tuesday evening next, January 30th. Among others Dr. Hankin and Messrs. Alec Ogilvie, J. W. Dunne and A. E. Berriman will take part. Those who wish to speak or receive tickets of invitation should write immediately to the secretary at 53, Victoria Street, S.W.

CORRESPONDENCE

*** The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.*

Correspondents communicating with regard to letters which have appeared in **FLIGHT**, would much facilitate ready reference by quoting the number of each letter.

Re Crucifer Aeroplane.

[1471] On October 15th, 1910, you were good enough to observe: "In this machine, the Crucifer, the body has a hemispherical head, short cylindrical trunk, and a long, gradually tapering tail." You also prophesy thus: "The body of the Crucifer aeroplane is an example of the fish-shaped or stream-line form, construction that in one or other of its various styles must almost necessarily come into vogue in later stages of aviation if the high speeds that are anticipated become common practice." In the following week, in Part IV of your series of helpful articles entitled "Can we fly faster for less power"? you remark, "the hemispherical nose is likely to have the best degree of all-round efficiency as well as being structurally convenient. The hemisphere presents the same conditions of entry to any relative wind within a wide range of obliquity, and having regard to the various experiments that have been conducted in aerodynamics, and touching directly upon this subject, it appears to us that the form suggested has much to commend it." Mr. A. E. Berriman, whom I think the author of the preceding opinions, subsequently presented them before the British Association at the Plymouth meeting last year, and, if reference is made to his valuable summary, "The Principles of Flight," his further commendation of this shape of body will be found. It is, in fact, known to experts that it is the most efficient of all; and certain constructors, in England and France, now recognising its overwhelming importance, have begun to use it, its initial employment in aeroplane design being wrongfully attributed to them.

On October 15th, 1910, you noted that the Crucifer machine (with this shape of body allowed in the claims) had been patented (in Great Britain), in April, 1909. A year later, under the International Convention, patents for this machine, so formed, were granted to me in other countries, including France, and, also, in certain of our own Colonies.

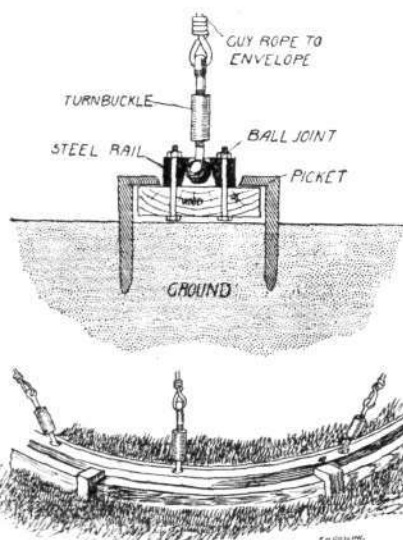
Will you, with your usual courtesy, kindly publish this statement, so that my priority and rights may be duly recognised?

Hayward's Heath, L. BEAUCLERC GOLDMAN,
January 3, 1912. per H.R.P.

Airship Anchorage.

[1472] I send a sketch of my idea of a "portable military airship anchorage" for field services, either in peace or war, and hope, if you have room in your excellent paper, you will exhibit it for the sake of open criticism.

FREDK. H. GOSLING,
Sapper R.E.



Ergaer.

[1473] I have read "A Study of Bird Flight" with great interest, and I hope Dr. Hankin will be able to supply more information on the subject before long. His theory of a continuous explosion giving a sufficient upward pressure to sustain the bird is very interesting. Supposing it is correct, what is there about the wings, or the bird, to act on the air in such a manner, as to cause that effect? Should not an inanimate plane of suitable shape moving at a suitable speed show the same effect? There appears to be nothing to cause the effect except the disturbance of the air. I should like to suggest that an experiment be made to prove this point. If an electric fan adapted to revolve in a horizontal plane, were placed on a spring scale, or run (with ammeter and voltmeter connected up) at intervals from morning to night, any marked difference in the lift and watts consumed would indicate the presence

of Ergaer. The fan would have to be placed where it would get the sunshine, be protected from wind, run at the same speed for all the tests, and of course in a locality where soaring flight is common.

I should like to make another suggestion, viz., that possibly the wing surfaces become charged with static electricity (as a driving belt) during the rapid movement of the bird through the air, also that the atmosphere is highly charged, during sunshine, with electricity produced as a result of evaporation. Possibly the sudden disturbance of the air by an electrified wing causes the force which Dr. Hankin calls "Ergaer" to be released. If the preceding experiment gives a negative result, it might be repeated with a fan having ebonite blades.

Bradford.

HAROLD SMITH.

[1474] I should like to draw your readers' attention to an article in the current number of the *Nineteenth Century*, entitled "The Solution of the Mystery of Bird Flight," by Mr. G. L. Davidson (the inventor of the "Davidson Gyropter," which has yet to make its appearance). In it the writer advances a theory for soaring flight depending on "the expanding energy of the air," which seems to me to be not at all in accord with Dr. Hankin's conclusions with regard to what he calls "Ergaer." For myself, I am not sufficiently conversant with the subject to be able to argue for or against Mr. Davidson's assertions, but it would be interesting to hear different opinions on his theory as opposed to that of Dr. Hankin. The article in question is an excellent contribution to a little known subject, and well repays reading.

Malta.

C. E. MAUDE.

The "British" War Aeroplane.

[1475] "We are determined to bring this country up to a proper, indeed to a high standard, in matters of military aviation."—Colonel Seely, Under-Secretary for War.

It is difficult to reconcile this bold statement—which in truth would make a grand motto for the Aerial League—with the Government's long deferred competition for aeroplanes, while we, who have hugged that statement in our adversity in the fond belief that *our proper standard was at least equal* to that of our neighbours, have received something more than a slight shock in the Government's announcement that it is only one-fifth that of France, if its height is in direct proportion to the amount to be expended in prizes and about one one-hundredth of that of France or Germany if in proportion to total outlay. The inadequacy of the amount can only be brought home to the nation, if we receive in direct proportion, that for which we are willing to pay, in other words, after the competition we should have one one-hundredth part the strength and efficiency of France or Germany.

One must be forgiven if in trying to scratch beneath the surface to find relief, or in other words, in trying to analyse the more recent statements of responsible statesmen one treads upon soft ground and a little mud flies.

Colonel Seely's statement at the Aeronautical Society's discussion gives no relief, it is too vague, and implies, so far as words go, something less than the statement which heads this article, therefore we must turn to Lord Haldane's reply to the Earl of Hardwick.* This reply discloses a state of affairs unprecedented in history, for if Lord Haldane's statement on this occasion is worth anything the prize is offered for a type of machine we shall not eventually require, on the other hand, if this statement was made to cover the admitted inadequacy of the prize offered, we, for the first time, find a British Minister deliberately trying to deceive the nation on a matter of armament to save a few pounds. If, and I say "if" advisedly, our aerial policy is to be that indicated, it is very similar to that recommended in **FLIGHT** of May 6th last, "we require our air services for sea purposes," &c., then the prize now offered is a waste of public money, in a double sense, it is offered for a type we shall not eventually require, and will probably go to strengthen a firm which, in the event of war, would be unable to supply the type (or for that matter any type), we may require.

We are told that the aerial policy of the nation is in a state of flux, this was perhaps unnecessary, the words and actions of our responsible Ministers can leave no doubt on this point, and the quicker a policy is decided upon the better for the Empire, the taxpayer, the constructor and last, but not least, the Ministers.

To state that this condition of flux is due to the policy of nations, or the state of the aeroplane's development, is childish, and cannot

* **FLIGHT**, December 16th, Aeroplanes in Parliament.

be accurate for the simple reason that our needs, which Lord Haldane was at so much pains to prove, are not those of our neighbours, therefore our policy cannot be, while the development of the aeroplane must depend to a certain extent on the demand for them, therefore directly upon the policy of our own Government. To state that our need of aerial armament is less because our army is small is the reverse of accurate, its very smallness demands that our aerial fleet should be sufficient to deal, *unaided*, with that of any other power. We must not overlook the fact that an aeroplane's base—to-day—may be a ship, and that their comparatively small cost permits, if necessary, of their being abandoned after the successful accomplishment of their mission. This defines our strength. After Lord Haldane's confession and admissions it cannot be considered presumptuous on our part to offer him every assistance, not only in settling the aerial policy, but in directing his attention to several obvious mistakes, or misstatements contained in his reply to the Earl of Hardwick, which are undoubtedly the root and cause of his, let us say, strange position with regard to aeronautical matters. The one of greatest importance, perhaps, seeing that the aeroplane has so far failed to develop a commercial side, is the analogy of the motor car, the French Government have recognised this fact and treated the aeroplane industry as a purely armament one, for they have arrived at the common sense conclusion that if the Government "will never lavish money in the hope that something may come of it" in a matter of armament, a private firm is not in a position to do so. Another is that "practical British genius" cannot afford to undertake expensive experimental work for the Government without hope of adequate return for brains, time, labour and material, while if the policy is to be that indicated, the matter is a purely armament one, and demands instant attention, the failure of recognising it as such rests entirely with the Government and the blame can only fall in one place.

To prevent further waste of public money and precious time, it is essential that the aerial policy of the country should be at once settled and as far as possible made public, that policy at least so far as it effects type cannot be so difficult to settle, the factors which govern it are the same to-day as they were yesterday and will be to-morrow, we had—have—and I presume will retain, "our small Army and great Navy," in addition we are an island kingdom, and an Empire divided by the sea; over the sea comes our food supply, and over the sea must come our enemies, so that it is difficult to reasonably expect our aerial policy to be other than that indicated, at least, eventually.

But whatever that policy be, it is obvious, or it should be, that the prize now offered, would be better utilised in building up the British industry.

We cannot but appreciate the *thought* that would obtain for the nation the best in the world for the smallest possible outlay, but we cannot appreciate the *action* of offering prize money to foreign armament industry for a type of machine we professedly do not require, and at the same time state we expect British industry to carry out the necessary experiments, and evolve the type we do require, without even a definite specification being given them.

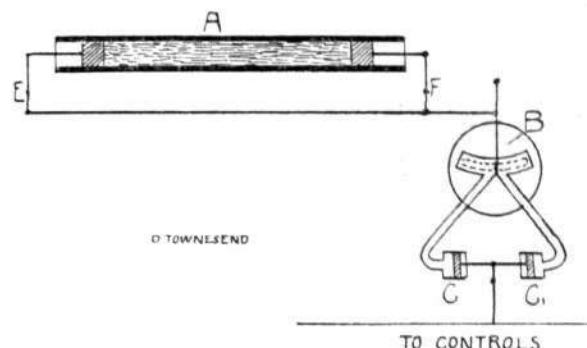
In conclusion I would point out the fallacy of attempting to give any prizes before the aerial policy is settled, the urgency of settling that policy, seeing we are admittedly so far behind other nations, the stupidity of expecting to obtain the same efficiency and strength as our neighbours in matters of armament, with less expenditure of money—and of attempting to separate the aeroplane from the aeroplane industry. Even in the distribution of prizes they are inseparable, and the prizes must be sufficient to build up, not only the aeroplane, but the aeroplane industry in this country, no matter what type the machine.

To obtain these things I would suggest a stated policy, bold and untrammelled by what other nations are doing, except as regards strength; immediate action; a series of progressive competitions as soon as *but not before* the aerial policy is settled. The prizes in these competitions should be numerous and adequate, but not necessarily large. The winning qualities in the first become essentials to those who entered the second competition, and so on until we have obtained what we require. This does not prevent the rules governing them being such that the machines are not only equal, but better than those of our neighbours. The Government could not do better than place the whole matter, or so much of it as they were inclined, in the hands of those gentlemen who so ably held the discussion under the Aeronautical Society, assisted by any others they saw fit to add. Under these conditions, providing the points considered essential were asked for gradually but not slowly, and immediate action is taken, we shall obtain, for the least possible expenditure, in the shortest space of time, all those things inseparable from the manufacture of armament, *i.e.*, skilled labour, erected plant, stock of raw materials, and inventiveness, while last but not least, capital and organisation will be at the disposal of the constructors of the British War Aeroplane.

FRANK W. B. HAMBLING.

Automatic Stability.

[1476] I should like some reader to give his opinion of the following device for stability. In the sketch shown, A is a cylinder of mercury fitted with pistons at each end, which are connected to the levers of fulcrum, E and F; these two levers are connected and work the valves of B, a compressed air cylinder, which open into cylinders, C and C₁, which are connected to the control wires. The apparatus can be used for lateral or longitudinal balance. Supposing it is used for lateral balance and the right wing is raised, then the left-hand piston of A is pushed out by the weight of the mercury,



while the right one fills up the vacuum; the two connected levers working together open the left-hand valve, and so the compressed air passes to C, and the control wire is moved to the left, thereby depressing the right aileron (as in a Farman) and righting the machine. The mechanical details are not shown; the valve at B is an arc of a circle working over a slit (shown dotted), which when opening one side keeps the other closed.

Courichan, B.C.

D. TOWNSEND.

Soaring in Horizontal Wind.

[1477] I remember seeing some years ago in one of the magazines a description of a small boat, which was propelled by means of a species of fork fitted to the keel. The prongs of the fork consisted of flat-steel strips pointing aft. The constant flexing of these steel strips by the motion of the waves, and their recovery, due to their natural springiness, drove the boat, and, if I remember rightly, a speed of 4 knots an hour was obtained on trial. Is it possible that soaring in puffy horizontal winds by birds is due in a similar manner to the constant flexing and recovery of the wing feathers by the gusts? This idea seems to be further borne out by the fact that a bird cannot soar in a steady horizontal wind.

Lincoln's Inn Fields.

JOHN V. L. HALL.

[The reason why a bird cannot soar in a steady horizontal wind is because the bird has no abutment by means of which it can extract energy from the wind. Consequently, the bird and its orbit, supposing it to be making a variety of manoeuvres in an attempt to extract energy from the air, is ultimately blown along at the speed of the wind. A steady horizontal wind is virtually still air, as may be more readily understood by the analogy of the fly in the railway carriage of a moving train.

In a pulsating horizontal wind the inertia of the bird resists the greater gusts, while its momentum continues the forward motion during the lesser gusts. In our recent article on soaring, Lanchester's experiment with the switchback model was described in explanation of this theory.

Wave motion of the kind described in the above letter is known to exert a propulsive effect, and has formed the subject of several experiments. Brearey, the first secretary of the Aeronautical Society, was, we believe, one of those who devoted a considerable amount of attention to this phenomenon, while Laurence Hargrave in Australia might almost be said to have made it the basis of some of his investigations. To our mind, the waving-prong is somewhat analogous to the propeller, in which the blade is continued into a complete helix. Arguing on Laurence Hargrave's work, elements in the waving-prong form instantaneous trochoidal planes, and the cycle of their operations produces what is in effect a wing beat. The wing is, therefore, a curtailed form of the prong, just as the propeller-blade is a curtailed form of the helix; like it, too, the wing is probably the more efficient instrument.

We do not think that there is any evidence to show that the wing flexes in the manner suggested, nor is there any reason to assume the hypothesis in order to explain forward motion in soaring flight. In the case of soaring flight taking place in a wind with a slightly upward trend, it is very easy to see how the resultant force on the wing is inclined forward of the vertical, thus producing a horizontal component of propulsion in the forward direction. Lilienthal, experimenting on cambered sections of circular arc shape, showed

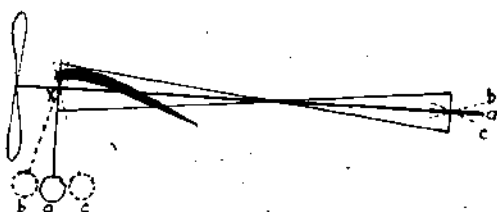
that the forward component, which has been called Lilienthal's tangential, existed even when the plane was made to assume an attitude of minus three degrees angle of incidence. The early experiments of the Wright Brothers, made by flying their glider as a kite, showed conditions in which the propulsive component due to the forward inclination of the resultant was sufficient to overcome the head resistance of all the subsidiary framework not contributing to the lift. Their more recent experiments have been made with a view to ascertaining the simplicity or otherwise of controlling a glider under soaring conditions. The result showed that a considerable measure of skill, and far more active operation of the control organs, was necessary than in the case of ordinary gliding or flying.—ED.]

MODELS.

Pendulum Stability for Models.

[1478] An idea which has occurred to me makes me wonder whether any arrangement in connection with a pendulum has been used for the purpose of obtaining *fore and aft* stability in aeroplanes. Perhaps this sort of thing is no longer entertained with regard to real machines; but how would it be as to models?

The idea is shown roughly in the accompanying sketch, which is supposed to represent a Blériot type. (I fear it is reminiscent of an older business than the aeroplane industry.) A pendulum working on an axle at *a* is allowed a certain freedom of motion when the



model is flying. Should the model's head be thrown down, the pendulum will be at *b*, should the tail fall, at *c*, and in horizontal flying at *a*. The movement of the pendulum will, of course, govern the tail, which at *a*, *b* and *c* corresponds with the *a*, *b* and *c* of the pendulum.

The obvious disadvantages are (1) the weight of the pendulum (it would have to be sufficient to move the tail), and (2) alteration of the centre of gravity. As to the weight, after all, it would not, perhaps, have to be more than the corresponding weight of the landing chassis on a real machine, while in general position it would correspond with the disposition of that weight. With regard to the centre of gravity, the difficulty could, perhaps, be overcome by experiment.

The idea could be applied in the same way to a model flying "elevator on," only in this case the connecting "wires" would not need to be crossed.

Of course, the tail need not necessarily be fixed at a right angle to the pendulum (as in sketch), but at any angle required. Interesting results, both with gliding and power models, should be obtained in this way.

ONLOOKER.

A Question of Name.

[1479] Our attention has been called to an advertisement in the current issue of FLIGHT in which another firm are advertising model aeroplanes under a similar name to that used by ourselves for the last three months.

To avoid any possible confusion in the minds of readers of FLIGHT we would point out that the "Victor" model aeroplanes flown so successfully by Mr. A. B. Clark and Mr. L. Brough at the Lee Aerodrome were made entirely by the Victor Aero Co., and these models can only be obtained direct from us, as we have not appointed any agents.

VICTOR AERO CO.

VICTOR C. BENTLEY, Manager.

1, Railway Approach, Brockley, S.E.

Natural Stability.

[1480] With reference to the letter of Mr. W. H. Booth (No. 1,469), like most of my critics—and I have a good many—he gives as reasons against my design a number of things which he says would occur, and quite ignores the fact that in my book, which possibly he has not read, I state plainly enough that I have only set forth things that actually *have* occurred. May I assure Mr. Booth that, before venturing into print, I spent some years in making hundreds of models of all sizes and weights, and testing them in all possible conditions, with the result that I found that none of the things which Mr. Booth prophesies ever happened. The only criticism I have ever seen which I think at all touches the practicability of the device is one that was given in a review in one of your contemporaries, which suggested that there would probably be a loss

of efficiency. I cannot deny this, as I have never been able to make a model having the centre of gravity and the thrust in the right place without using a gear, which, of course, means too much friction for any model to stand. But, naturally, I do not believe there would be any loss of efficiency; and if there was, it would be well lost in exchange for the absolute stability of the machine. As you remark, with regard to the Dunne machine, "the acquisition of a reasonably high degree of natural stability in aeroplanes would do more than anything else just now to revitalise other and older branches of the art, and also to bring new fields of activity into existence." I can greatly appreciate your attitude on this point as it stands out so clearly against that of some of your contemporaries, who contend that an aeroplane is already as stable as it needs to be, and persist in this absurd attitude in spite of the daily evidence of their own senses, fancying that in this way they may be able to persuade the public to take up flying as an ordinary form of sport. There is no need to exaggerate the dangers of aviation, as the ordinary newspapers seem to be quite capable of doing that, but on the other hand, surely no good end is to be served by shutting our eyes to the fact that aeroplanes are really capable of improvement in this, as in other respects.

With respect to Mr. Booth's sketch, he himself recognises that the lower half of his box kite duct "somewhat counteracts" the effect of the upper half, which is precisely the reason why I think it better to use only one half.

I think there is nothing else in Mr. Booth's letter that needs a reply, since we seem to be agreed as to the essentials of the device, but I would really like to know how, exactly, one can "close my irregular diamond panels in streamline form"? This, I must confess, is above my limit.

Maida Vale, W.

W. LE MAÎTRE.

PUBLICATION RECEIVED.

Stability in Aviation. By G. H. Bryan, Sc.D., F.R.S. London: Macmillan and Co., Ltd. Price 5s. net.

Aeronautical Patents Published.

Applied for in 1910.

Published January 25th, 1912.

28,140. C. CONSTANTINI. Flying machines.

Applied for in 1911.

Published January 25th, 1912.

83. R. J. ISAACSON. Driving of aerial propellers.
1,605. N. A. THOMPSON. Aeroplane.
9,155. A. KRUMHOLZ. Movable roof for airship garages.
11,697. A. J. A. DEPERDUSSIN. Aeroplanes.

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